Daniel, T.F., D. Denham-Logsdon, B.Y. Bedolla Garcia, J.G. González-Gallegos, P. Carrillo-Reyes, and D.S. Figueroa. 2024. Mexican Acanthaceae: New distribution records and taxonomic notes on noteworthy species. Phytoneuron 2024-73: 1–15. Published 11 November 2024. ISSN 2153 733X

MEXICAN ACANTHACEAE: NEW DISTRIBUTION RECORDS AND TAXONOMIC NOTES ON NOTEWORTHY SPECIES

THOMAS F. DANIEL[1]
DALE DENHAM-LOGSDON[2]
BRENDA YUDITH BEDOLLA GARCIA[3]
JESÚS GUADALUPE GONZÁLEZ-GALLEGOS[4]
PABLO CARRILLO-REYES[5]
DANTE S. FIGUEROA[6]

[1] Department of Botany, California Academy of Sciences
San Francisco, California
tdaniel@calacademy.org

[2] 10353 N 65th St.,
Longmont, Colorado
DalesMicro@aol.com

[3] Instituto de Ecología, A.C., Secretaría Técnica-Colecciones
Centro Regional del Bajío, Pátzcuaro, Michoacán, México
brenda.bedolla@inecol.mx

[4] Instituto Politécnico Nacional, CIIDIR Unidad Durango
Victoria de Durango, Durango, México
xanergo@gmail.com

[5] Departamento de Botánica y Zoología
Centro Universitario de Ciencias Biológicas y Agropecuarias
Universidad de Guadalajara
Nextipac, Zapopan, Jalisco, 45200, México
pcarreyes@gmail.com

[6] Jardín Botánico Haravéri
San Sebastián del Oeste, Jalisco, México
pinidae@gmail.com

ABSTRACT

Geographic range extensions are documented and discussed for 21 species in 10 genera of Acanthaceae that occur in Mexico. Most of these are new state records, while others represent significant range extensions within a state for rare and/or noteworthy species. Images of 16 of these species are provided. In some cases, new identification keys are offered for previously confused species.

RESUMEN

Se documentan y discuten extensiones de distribución geográfica de 21 especies en 10 géneros de Acanthaceae que se encuentran en México. La mayoría de estas son nuevos registros estatales, mientras que otras representan ampliaciones de distribución significativas dentro de un estado para especies raras y/o notables. Se proporcionan imágenes de 16 de estas especies. En algunos casos, se ofrecen nuevas claves de identificación para especies previamente confundidas.

With more than 400 species, Mexico has the second highest number of Acanthaceae among countries in the New World (Daniel 2022); only Brazil with 500+ species has more (Flora e Funga do Brasil 2024). New species continue to be located in many regions of the country, especially in the states of Oaxaca and Guerrero. Documented additions of currently known taxa to the acanthaceous floras of Mexico's 32 states also increases via recent collecting efforts and studies of specimens in

the country's numerous herbaria. A listing of all Mexican Acanthaceae with citation of a collection voucher for each state of occurrence is currently being prepared.

Below, we document occurrences for 21 species of Acanthaceae in 17 Mexican states. These consist of new state records or additional collections of several rare and/or noteworthy species in some states. New distribution records are noted for species in the following states (number of species): Chiapas (1), Durango (2), Guerrero (5), Guanajuato (1), Hidalgo (1), Jalisco (2), México (3), Michoacán (1), Morelos (1), Nayarit (1), Nuevo León (1), Puebla (1), Quintana Roo (1), Veracruz (1), Yucatán (1), and Zacatecas (1). Noteworthy range extensions of species within states are documented for Guerrero (4), Michoacán (1), and Oaxaca (3). Three species are newly reported to occur in the Oaxacan portion of the flora area of the *Flora del Valle de Tehuacán-Cuicatlán*; one of these represents a corrected identification. Three other species of Acanthaceae recently reported elsewhere from the same region in Oaxaca are also noted. In several instances species noted below have been cited previously as occurring in a state, but either without documentation (i.e., citation of an herbarium voucher specimen) or based on a misidentification.

CARLOWRIGHTIA HUICHOLIANA T.F. Daniel

Nayarit: Mpio. La Yesca, 0.5 km NO de Xatsitsarie (Guadalupe Ocotán), 21°53'50"N, 104°21'32"W, 1050 m, ecotono de bosque tropical caducifolio–bosque *Quercus*, 19 X 2023 (flr), *Carrillo-Reyes et al. 10524* (IBUG).

This appears to be the first documentation of *Carlowrightia huicholiana* (Fig. 1A) in Nayarit. It was previously known from Jalisco and Zacatecas (Daniel 1999c). The species was listed as occurring in Nayarit by González Flores (1998: 32 "dado que no se tienen colecciones de esta especie...") in her unpublished thesis, but no collections or localities were cited.

DICLIPTERA UNGUICULATA Nees

Guerrero: Mpio. Chilapa de Álvarez, Ayahualulco, 17.501944°N, 99.184167°W, 1430 m, selva baja caducifolia, 20 I 2013 (flr, frt), *Cristino Torres 14245* (FCME); Mpio. Malinaltepec, Malinaltepec, 17°14'N, 098°40'W, 1700 m, 15 I 1992 (flr, frt), *Wagenbreth 843* (MEXU, MO).

Dicliptera unguiculata (Fig. 1B) is newly reported from Guerrero. It was previously known in Mexico from Chiapas, Oaxaca, and Veracruz (Daniel 1995). The species also occurs in Central America and South America (e.g., Daniel 2010, Wasshausen 2013). Daniel (1995) provided a description of the species.

DYSCHORISTE ANGUSTIFOLIA (Hemsl.) Kuntze

México: Mpio. Tlatlaya, Rincón Grande [ca. 18°26'40.48"N, 100°20'32.12"W] y Llano Grande, 22 VII 1954 (flr), bosque deciduo, 400–950 m, *Matuda et al. 31062* (MEXU).

Previously known from Colima, Jalisco, and Michoacán (Daniel and Acosta Castellanos 2003), this represents the first report of *Dyschoriste angustifolia* in the state of México, where it was collected in the southwesternmost portion of the state. This species and the rarer *D. mcvaughii* differ from all other Mexican *Dyschoriste* by their red (to orange-red, pinkish, or reddish brown) corollas (Figure 1D). Corollas in the other species are purple to blue-purple. Daniel (1990, 1996) noted the differences between *D. mcvaughii* and *D. angustifolia* (as *D. rubiginosa* Ramamoorthy & Wassh.). The open corolla on *Matuda et al. 31062* is perhaps still young, and at ca. 22 mm long, is slightly shorter than previously reported for the species. As in other plants of this species, the thecal appendages of Matuda's collection are often recurved and difficult to see.

ELYTRARIA MEXICANA Fryxell & Koch

México: [Mpio. Tonatico], Grutas de la Estrella, ca. 7.5 km (air) SE of central Tonatico, 18°44.787'N, 99°37.866'W, ca. 1590 m, disturbed rocky areas under trees in region of tropical deciduous forest, 8 XII 2019 (flr, frt), *Daniel & Denham 12310* (CAS); Distr. Temascaltepec, Vigas, 1080 m, 17 XI 1932 (flr, frt), *Hinton 2616* (BM, G, GH, K, NY, US-image); Distr. Temascaltepec, Pungarancho, 12 I 1933 (flr, frt), *Hinton 3135* (BM, G, GH, K, NY, US-image); Distr. Temascaltepec, Tenayac, 17 II 1933 (flr, frt), *Hinton 5111* (G, GH, K, NY, US-image).

Morelos: [Mpio. Tetecala], Tetecala, [ca. 18°42'21.82"N, 099°24'51.01"W], dry hill, ca. 1500 m, 26 XI 1943, *Schiefer 202* (GH).

Elytraria mexicana (Figure 1F) was listed as occurring in México by Villaseñor (2016) and Martínez-De La Cruz et al. (2018), but without indication of vouchers. The collections noted above document its occurrence in that state. Hinton's collections from México were all identified as *E. imbricata* (Vahl) Pers. (e.g., Hinton et al. 2019). Schiefer's collection from Morelos appears to be the first record of *E. mexicana* in Morelos. It has been previously reported from Colima, Guerrero, Jalisco, Michoacán, Querétaro, San Luis Potosí, and Zacatecas (Daniel 2024). *Elytraria mexicana* differs from the similar and more common *E. imbricata* by the characters in the following key:

1. Inflorescence bracts (at least distal ones) apically 3-dentate (lateral teeth hyaline and alate, central tooth aristate; lateral teeth rarely absent), abaxially glabrous (or very slightly and inconspicuously pubescent); corollas blue-purple to purple with yellow (sometimes absent) and white markings on lower lip (corollas rarely white), 5–8.5 mm long, lower lip 3–4.5 mm long .. **Elytraria imbricata**
1. Inflorescence bracts mucronate to subaristate at apex, lacking lateral teeth, abaxially conspicuously pubescent with silky trichomes; corolla cream to white with dark purple markings on upper (and sometimes lower as well) lip(s), 7–18 mm long, lower lip 4–9 mm long ..... **Elytraria mexicana**

HOLOGRAPHIS PELORIA (Leonard) T.F. Daniel

Guanajuato: Mpio. Silao de Victoria, ± Velarde, 1.2–1.3 km NE por vereda por una cañada de ascenso a El Cubilete, 5–6 km NE de Silao, 21°00'17.44"N, 101°23'15.18"W, 1984 m, matorral subtropical, 30 VIII 2023 (flr, frt), *González-Gallegos et al. 2927* (IEB).

Zacatecas: [Mpio. Chalchihuites] near El Vergel, ca. 14.5 mi. WSW of Sombrerete, along Río Antonio [Río de San Antonio], [ca. 23°34'47.68"N, 103°51'25.83"W, ca. 2020 m], "Acacia-Mesquite-Cactus shrub grassland," 19 VIII 1969 (flr, frt), *Taylor & Taylor 6297* (NY).

These collections document, apparently for the first time, occurrences of *Holographis peloria* in two Mexican states. It has been previously reported from Durango, Nayarit, and Zacatecas (Daniel 1984, 1988, 1999c); however, no voucher specimen or details were reported for its presence in the latter state. The sole collection from Zacatecas occurs near its border with Durango. The record from Guanajuato was first detected via a photograph on iNaturalist from Silao (user bodofzt, Bodo Nuñez Oberg, 6 VIII 2022; https://mexico.inaturalist.org/observations/130016684). Following a search there, the resulting collection (Figures 2B, C) represents the easternmost and southernmost known occurrence of *H. peloria*, and plants at the site were noted to be abundant. The species was not included among Acanthaceae listed for either Guanajuato (Zamudio and Galván 2011) or the Flora del Bajío y de Regiones Adyacentes (Daniel and Acosta Castellanos 2003). *Holographis peloria* can be distinguished from congeners with similarly small corollas (i.e., ≤ 20 mm long) by the key in Daniel (1988).

JUSTICIA MATUDAE T.F. Daniel

Guerrero: Mpio. La Unión, KM 61 de la carretera Lihuatanejo [Zihuatanejo]–Cd. Altamirano, [ca. 17°58.023'N, 101° 15.691'W], 990 m, bosque de encino, 1 X 1983 (flr), *González F. 370* (FCME).

This is the first report of *Justicia matudae* (Figure 2A) from Guerrero. Daniel (2019) provided a description of the species and reported its occurrences from regions of Michoacán to the northwest and México to the northeast (Figures 2A, 3).

JUSTICIA NOVOGALICIANA T.F. Daniel

Guerrero: Mpio. Chilpancingo, 4 km SW de Zumpango del Río, carretera hacia Chilpancingo, [ca. 17°37'41.37"N, 99°32'34.13"W], 1160 m, selva baja caducifolia, 26 VI 1981 (flr), *Limón 91-VII* (FCME).

This collection represents the second known collection of *Justicia novogaliciana* from Guerrero. It extends the range of the species into central Guerrero, ca. 180 km E of the only other known locality in the western portion of the state (Daniel 1999b). Plants were noted by the collector to be abundant at this site. The species has been previously documented from Jalisco (Daniel 1999b).

JUSTICIA PECTORALIS Jacq.

Guerrero: Mpio. Ometepec, "Santa María, talápa" [Barrio de Talapa], "16°41'01"N, 98°24'08"W" [ca. 16°42'3.89"N, 098°24'59.36"W], 330 m, selva baja caducifolia, 01 IV 2012 (flr), *Vargas Pérez. 11819* (FCME); Mpio. San Luis Acatlán, Yoloxóchitl, en la parcela del Sr. Pedro Celestino García, 16.81193°N, -98.67839°W, 628 m, bosque tropical subcaducifolio, sobre arroyo, 17 III 2017 (flr), *Velasco 40308* (CAS).

Justicia pectoralis (Figure 1E) has not been reported previously from the state, and may be only cultivated or naturalized there. However, the information provided by the collectors suggests that plants from Guerrero are presumably native there. Information on *Vargas Pérez 11819* notes that plants were frequent at this site. A local name "monte" and unspecified medicinal uses were also noted by the collector. Information on *Velasco 40308* also suggests an occurrence outside of cultivation.

The species has a wide Neotropical distribution, occurring from central Mexico and the West Indies southward to Brazil and Peru. In Mexico, occurrences have been noted from the following states: Chiapas, Oaxaca, Puebla, San Luis Potosí, Tabasco, Veracruz, and Yucatán (Daniel 1995). However, specimen label data on the sole collection in Yucatán (*Sabas Flores s.n.* at F) noted that plants had been introduced from Tabasco, and the occurrence in San Luis Potosí (*Alcorn 2739* at US) indicated that the plant was grown as a dooryard crop and has a medicinal use. Thus, the species is likely neither native to nor naturalized in either of those two states.

JUSTICIA SPICIGERA Schltdl.

Oaxaca: Distr. Coixtlahuaca, Platanar, río abajo, Xiquila, 18°00'38"N, 097°14'58.23"W, 1005 m, bosque tropical caducifolio, 8 III 2018 (flr), *Medina Lemos et al. 6081* (MEXU).

Although cultivated in most states of Mexico for its various ornamental, medicinal, and dyeing uses, Daniel (2019) indicated potentially native occurrences of *Justicia spicigera* (Figures 2D, E) in at least Chiapas, Oaxaca, Tabasco, and Veracruz. This collection documents the species from the region of Oaxaca covered by the *Flora del Valle de Tehuacán-Cuicatlán* project. Since Daniel's (1999a) account of Acanthaceae for that project, which did not include *J. spicigera*, other species of the family subsequently reported from the Oaxacan portion of the Tehuacán-Cuicatlán Valley consist of: *Holographis leticiana* (Daniel 2016), *Justicia paucifolia* T.F. Daniel (Daniel 1999c), *Ruellia hookeriana* (see below), and *Tetramerium tenuissimum* Rose (Daniel 2016).

JUSTICIA WILBURII T.F. Daniel

Guerrero: Distr. Montes de Oca, [Mpio. Zihuatanejo de Azueta], San Antonio–Buenos Aires, [ca. 17°56'43.97"N, 101°16'37.76"W], "on tree," 7 V 1938 (flr, frt), *Hinton et al. 14090* (MICH, MO-image, US-image)

Jalisco: barranca at Puente San Pedro, 8 km SW of Tecalitlán, [ca. 19°26'16.54"N, 103°21'01.47"W], oak forest with few pines, ca. 1200 m, abundant in deep shade, 12 III 1965 (flr), *McVaugh et al. 22939* (MICH).

Michoacán: Mpio. Coalcomán, barranca La Pitahaya, ca. 5 km W de Las Joyas (en línea recta), ca. 18°30ˈ30"N, 103°05'50"W, 1780 m, bosque de pino-encino, 6 IV 2008 (flr), *Ramírez-Amezcua & Steinmann 1284* (IEB).

Justicia wilburii (Figure 1C) was previously known only by the type collection from southwestern Michoacán (Daniel 2024). *Ramírez-Amezcua & Steinmann 1284* represents the second collection from that state and region, with plants occurring ca. 38 km to the southeast and at a higher elevation than the type collection. *Hinton et al. 14090* from western Guerrero is the first report of this species in that state, and ca. 200 km southeast of *Ramírez-Amezcua & Steinmann 1284*. It was listed as *Justicia veracruzana* by Hinton et al. (2019). *McVaugh et al. 22939* from southeastern Jalisco is the first record of the species in that state and an occurrence ca. 85 km north of the type locality in Michoacán (Figure 3).

These additional collections reveal some morphological differences with the description of the type. Among plants of *Hinton 14090*, only some, most, or all of the dichasia are opposite along inflorescence axes (vs. all dichasia opposite); and bracts subtending the first order branches of the inflorescences are sometimes smaller (e.g., on MICH specimen, these bracts are reduced to lance-ovate in shape and to 2.5–3 mm long and 1 mm wide on one inflorescence whereas on another, they are more typical (i.e., subcircular to ovate in shape and 5–12 x 4–6 mm in size).

LOUTERIDIUM RZEDOWSKIANUM T.F. Daniel

Mpio. Juan R. Escudero, 17°07.78'N, 99°33.76'W, 271 m, selva mediana, 3 II 2015 (flr, frt), *López L. & Omar W. 20293* (FCME).

Louteridium rzedowskianum was previously known only from the type locality in the central Sierra Madre Sur of Guerrero (Daniel and Tripp 2018). *López L. & Omar W. 20293* occurs at a lower elevation ca. 20 km south-southwest of the type locality, and reveals both the persistence and a broader distribution for this apparently rare species in the central Sierra Madre Sur.

PSEUDERANTHEMUM CUSPIDATUM (Nees) Radlk.

Hidalgo: Mpio. Tlanchinol, ca. 6.2 km NE de Tlanchinol, 21°01'40"N, 098°37'51"W, 1309 m, bosque mesófilo de montaña, 21 IX 1997 (frt), *Alcántara Ayala & Mayorga Saucedo 3417* (FCME, MEXU); Mpio. Tlanchinol, 2.5 km N de Tlanchinol, 21°00'40"N, 098°39' 07"W, 1475 m, bosque mesófilo de montaña, 20 IX 1997 (flr, frt), *Mayorga Saucedo & Alcántara Ayala 897* (FCME, MEXU).

These collections, originally identified as *Pseuderanthemum alatum* (Nees) Radlk, appear to represent the first records of *P. cuspidatum* (Figure 1G) from Hidalgo. These two species can be distinguished by the key below. *Pseuderanthemum cuspidatum* was not listed from the state by Villaseñor (2016) or Villaseñor et al. (2022). In Mexico, *P. cuspidatum* was previously known from Chiapas, Oaxaca, Puebla, and Veracruz (Daniel 1995).

1. Proximal leaves cordate- to truncate- to rounded-decurrent at base; calyx 1.5–3 mm long ..... **Pseuderanthemum alatum**
1. Proximal leaves acute- to attenuate-decurrent at base; calyx 3–4.5 mm long ..... **Pseuderanthemum cuspidatum**

RUELLIA BLECHUM L.

Durango: Mpio. Tamazula, Tamazula, al E, alrededores de Rancho El Carrizal, por el camino a Agua Caliente, 24°58'16"N, 106°56'17"W, 190 m, bosque tropical caducifolio, alrededores de ojo de agua, 9 III 2002 (flr, frt), *González et al. 6601* (CIIDIR, MEXU).

Nuevo León: between Vallejo [Vallecillo?] and Monterrey, 1947 (flr), *Templeton s.n.* (RSA-image).

This widely distributed and weedy species of the American tropics (and introduced into the Paleotropics) was previously known from the following Mexican states: Baja California Sur, Campeche, Chiapas, Colima, Guerrero, Hidalgo, Jalisco, México, Michoacán, Morelos, Nayarit, Nuevo León (fide Hinton and Hinton 1995), Oaxaca, Puebla, Querétaro, Quintana Roo, San Luis Potosí, Sinaloa, Sonora, Tabasco, Tamaulipas, Veracruz, and Yucatán (Daniel 2004; as *Blechum pyramidatum* (Lam.) Urb). The collection from Durango was correctly identified by S. Acosta in 2014, and appears to be the first record of *Ruellia blechum* (Fig. 2J) from that state. *González et al. 6601* is a fruiting specimen that also appears to have cleistogamous flowers. Templeton's collection from Nuevo León, annotated with the synonym *B. brownei* Juss., is currently the only known record of *R. blechum* from that state. The species was previously reported from near Linares in Nuevo León by Hinton & Hinton (1995) and Villarreal Quintanilla and Estrada Castillón (2008); both reports cited *Hinton 17719* at TEX. An image of that specimen at TEX reveals a plant that more closely resembles *Justicia fulvicoma* Schltdl. & Cham. Specimens of *Hinton 17619* from the same locality (though 140 meters lower in elevation and on a different date in 1979) at CAS and ENCB are clearly *J. fulvicoma*. *Ruellia blechum* was noted to occur in Guanajuato by Villaseñor (2016), possibly based on a collection of *Tetramerium nervosum* Nees (*Rincón N. 153* at MEXU), which was originally misidentified as *Blechum pyramidatum* (a synonym of *R. blechum*). However, the species occurs in nearby Querétaro and likely will be found in Guanajuato as well.

RUELLIA FOLIOSEPALA T.F. Daniel

México: [Mpio. Tlatlaya] Dolores, Amatepec, [ca. 18°37'6.88"N, 100° 8'7.72"W], en matorral bajo, a orilla de arroyo, 850 m, 23 VIII 1954 (frt), *Matuda et al. 31279* (CAS).

This is the first report of this species from the state of México. It was previously known from Guerrero and Michoacán (Daniel 2013). Based on nine collections from three states, this species appears to be endemic to the Depresión del Balsas biogeographic province of western and central Mexico (Figure 3).

RUELLIA GALEOTTII Leonard

Chiapas: Chiapa de Corzo, a orillas del [Río] Grijalva, 16 I 1951 (flr, frt), *Sánchez Mejorada 540* (MEXU).

Oaxaca: [Mpio. San Juan Bautista Cuicatlán], Cuicatlán, 1800 m, 2 XII 1895 (flr, frt), *Smith C-138* (MEXU).

Puebla: Mpio. Acatlán de Osorio, Barranca El Tule, llegando por San Cristóbal, 18°11.845'N, 098°00.570'W, 1256 m, selva baja caducifolia, 19 XII 2013 (flr, frt), *Rojas-Martínez et al. 436* (MEXU); Mpio. Ahuehuetitla, carr. Acatlán–Boqueroncitos, 18°13'43"N, 098°08'56"W, bosque tropical caducifolio, 1375 m, 05 XI 2009 (flr, frt), *Vega-Flores 2081* (MEXU).

Ruellia galeottii (Figure 2F) was erroneously treated as a synonym of *R. inundata* Kunth by Daniel (1995, 1999a), and numerous specimens from Mexico of the former species were identified with the latter name. These two species can be distinguished by the following key:

1. Corollas usually blue-purple, throat broadly triangular-funnelform, shorter than the narrow proximal portion of the corolla tube; plants mostly occurring in Oaxaca and northward ..... **Ruellia galeottii**
1. Corollas usually pinkish, throat ± oblong-cylindric, longer than the narrow proximal portion of the corolla tube; plants mostly occurring in Oaxaca and eastward and southward .... **Ruellia inundata**

Although various shades of blue-purple and pink are noted on specimen labels for both species, field observations and images strongly suggest that corolla color is likely distinctive and diagnostic for these two morphologically similar taxa.

Sánchez-Mejorada's collection from Chiapas was previously identified as *R. inundata*, a species that is frequent in the state. Its reassessment as *R. galeottii* makes it the first and only record of that species in the state. Also, this would appear to be the easternmost occurrence of *R. galeottii,* a species endemic to Mexico. Both species are common in Oaxaca. Smith's collection listed above, as well as those listed by Daniel (1999a), confirm that plants in the *Flora del Valle de Tehuacán-Cuicatlán* project area pertain to *R. galeottii* rather than to *R. inundata*. Although corollas are only in bud on another specimen of *Ruellia* from Puebla (*F. Miranda 2460* from Acatlán, 11 X 1942, MEXU), this collection is from the same municipality in south-central Puebla as *Rojas-Martínez et al. 436* and likely also represents *R. galeottii* rather than *R. inundata*, with which name it was annotated by T. Daniel in 1993. The latter species is not currently known to occur in Puebla.

RUELLIA HOOKERIANA (Nees) Hemsl.

Durango: Mpio. San Dimas, Tayoltita, 4 km N de la aeropista por la terracería a San Dimas, 24°07'22.1"N, 105°55'19"W, 1021 m, bosque tropical caducifolio , 2 VIII 2015 (flr), *González-Gallegos et al. 1844* (CIIDIR, MEXU).

Oaxaca: Mpio. San Juan Bautista Cuicatlán, San Juan Coyula, Barranca Cuatima, a 200 m de Cuatima, 17°55'03.1"N, 096°55'26.3"W, 1100 m, veg. riparia, 21 VI 2006 (flr), *García García & Villarreal Blanco 917* (MEXU).

The collection from Durango (Figure 2H) represents the first report of *Ruellia hookeriana* from that state. This species of Mexico and Central America was previously known from 17 Mexican states including Oaxaca and Puebla (Daniel 2016), but was not reported by Daniel (1999a) as occurring in the *Flora del Valle de Tehuacán-Cuicatlán* project area of either of those two states. The collection from Oaxaca documents its occurrence in the Oaxacan portion of the Tehuacán-Cuicatlán Valley flora area.

RUELLIA OAXACANA Leonard

Guerrero: Mpio Atoyac de Álvarez, 1 km antes de San Andrés sobre la carretera Atoyac a Puerto del Gallo, 600 m, bosque tropical perennifolio, 1 V 1984 (flr, frt), *Aguilar J. 581* (FCME).

Jalisco: Mpio. San Sebastián del Oeste, Jardín Botánico Haravéri, sobre el sendero "pino yencino", 20.757986°N, -104.969632°W, 770 m, ecotone of Subdeciduous Tropical Forest and Pine-Oak Forest, 15 IV 2022 (flr, frt), *Figueroa, González-Gallegos, Velázquez-Ríos & Rivas 931* (IBUG); Mpio. San Sebastián del Oeste, Jardín Botánico Haravéri, junto al camino a Potrero de Mulas, 20.757090°N, -104.969598°W, 789 m, Pine-Oak Forest (flr, frt), *Figueroa & Acosta-Pérez 1550* (IBUG, CAS, ZEA).

Ruellia oaxacana (Figure 2G) is newly reported from Guerrero and Jalisco. It was previously known from the following states: México, Michoacán, Nayarit, and Oaxaca (Leonard 1938; Daniel 2024). Among similar species of *Ruellia* with blue-purple corollas 30–45 mm long, *R. oaxacana* can be distinguished by the following combination of characters: leaves, calyces, corollas, and capsules lacking conspicuous sessile patelliform glands; calyces 3.5–6 mm long with lobes subulate to linear and 0.3–1.6 mm wide; bracteoles triangular-subulate to lanceolate-subulate and 1–3 mm wide; and seeds with trichomes restricted to the margin.

RUELLIA PANICULATA L.

Quintana Roo: Mpio. Adolfo de la Huerta, 5.11 km W de Nuevo Plan de la Noria, 19°17'51"N, 088°41'05"W, 55 m, selva subperennifolia, 15 III 2004 (flr, frt), *Álvarez & Ramírez 8137* (MEXU); Mpio. Adolfo de la Huerta, 10 km E de Zafarrancho, 19°28'51"N, 088°47' 7"W, 104 m, acahual, 20 III 2004 (flr, frt), *Álvarez & Ramírez 8498* (MEXU); [Mpio. Othón P. Blanco], 1 km S del Ejido Caobas, [ca. 18°26'58.21"N, 088°58'58.10"W, ca. 162 m], 20 III 1981 (flr, frt), *Cabrera & Álvarez 1617* (CAS, MEXU); [Mpio. Othón P. Blanco], 7 km S de San José, rumbo a Tomás Garrido, [ca. 18°18'34.38"N, 089°01'32.30"W, ca. 160 m], 17 II 1981 (flr, frt), *Cabrera & Ibarra 1236* (CAS, MEXU); [Mpio. Hopelchén], en la brecha de Divorciados a La Pantera, por la Vía Corta a Mérida, [ca. 19°06'16.77"N, 088°27'47.62"W, ca. 30 m], 20 II 1981 (flr, frt), *Cabrera & Ibarra 1374* (MEXU); [Mpio. José María Morelos], Chichankanab, [ca. 19°54'N, 088°45'W; ca. 38 m], without date (flr, frt), *Gaumer 1441* (A, B, C, F, GH, MO, US), without date (flr, frt) *2279* (B, C, F, GH, MO, US); [Mpio. José María Morelos], Lake Chichankanab, IV 1917 (flr, frt), *Gaumer et al. 23659* (F, GH, MO, US).

The specimens listed above confirm the presence of the widespread *Ruellia paniculata* (Figure 2I) in Quintana Roo. In addition to its occurrence in Central America and South America, it has been reported previously from at least 11 Mexican states: Campeche, Chiapas, Guerrero, Nayarit, Oaxaca, Quintana Roo, San Luis Potosí, Sinaloa, Tamaulipas, Veracruz, and Yucatán (Daniel 2008). However, voucher specimens were not listed by Daniel (2008) for several of these states, including Quintana Roo. Carnevali Fernández-Concha et al. (2010) included (and vouchered) occurrences of *R. paniculata* in two states of the Yucatán Peninsula (Campeche and Yucatán). The specimens cited above document the presence of this species in the third Mexican state of the Yucatán Peninsula. Earlier collections of this species from Quintana Roo were misidentified as either "*Ruellia albicaulis* Bert." (i.e., collections of Gaumer) or *R. inundata* Kunth (i.e., collections of Cabrera).

RUELLIA PUBERULA (Leonard) Tharp & F.A Barkley

Michoacán: Mpio. Churumuco, Ejido Llano de Ojo de Agua, 18°42'40.027"N, 101°40'14.410"W, 518 m, bosque tropical caducifolio, 4 VII 2013 (flr), *Hernández Esquivel et al. 13* (MEXU); Mpio. La Huacana, Reparo de la Luna, 18°47'37"N, 101°48'29"W, 283 m, veg. riparia, 13 VIII 2003 (flr, frt), *Rendón Carmona 447* (MEXU); Mpio. Churumuco, Ejido Llano Ojo de Agua, El Recodo, 18°42'37"N, 101°40'04"W, 430 m, bosque tropical caducifolio, 9 IX 2015 (flr, frt), *Rojas 518* (MEXU).

Veracruz: Mpio. Puente Nacional, Tamarindo, 19°20'N, 096°30'W, 144 m, selva baja caducifolia, 20 VI 1981 (flr, frt), *Figueroa N. et al. 13* (MEXU).

Yucatán: Mpio. Yaxcabá, de Tixcacaltuyub 9 km rumbo a Peto, Rancho Rosario, 20°25'05"N, 088°55'35"W, veg. secundaria, potrero, 2 I 1988 (flr?, frt), *Simá 436* (MEXU).

Ruellia puberula is newly documented for both states of Michoacán and Yucatán. It was previously known from the Mexican states of Chiapas, Guerrero, Oaxaca, Puebla, and Veracruz (Daniel 1999a, 2016). Although listed as occurring in Veracruz by Daniel (1995, 1999a), no documentation (e.g., voucher specimens) were cited. The species was not included among Acanthaceae listed for Veracruz by Sosa and Gómez-Pompa (1994), and no subsequent documentation for its occurrence in that state has been located. Thus, the specimen cited above, originally identified as *R. nudiflora* (Engelm. & A. Gray) Urb., is likely the first documented report of *R. puberula* in Veracruz as well. Because the species is also known from the Petén of Guatemala, its occurrence in the Yucatán Peninsula of Mexico is not unexpected. Although none were evident on the specimen at MEXU, flowers were noted to be purple on *Simá 436*, and flowers were noted to be white on *Figueroa N. et al. 13*. A local name, "kaba yaaxnik," is also noted on the collection from Yucatán. The species is morphologically similar to *Ruellia intermedia* Leonard, but can be distinguished from it by the following key:

1. Capsule glabrous or pubescent only near apex with eglandular (and sometimes glandular) trichomes; corolla externally pubescent with eglandular trichomes; inflorescence rachis pubescent with eglandular trichomes ..... **Ruellia intermedia**
1. Capsule entirely pubescent with eglandular (and sometimes glandular, especially near apex) trichomes; corolla externally pubescent usually with both glandular and eglandular trichomes; inflorescence rachis pubescent with eglandular or glandular trichomes ..... **Ruellia puberula**

Pubescence of the capsules (when it is present) is the most consistent distinction. On plants lacking capsules, glandular trichomes on the inflorescence rachis and/or corollas are indicative of *R. puberula.*

STENOSTEPHANUS GUERRERENSIS T.F. Daniel

Guerrero: Mpio. Atoyac de Álvarez, 16 km sobre el camino de Puerto de Gallo a Atoyac, [17°27'20.23"N, 100°11'43.82"W], 1960 m, bosque mesófilo de montaña, 14 III 1983 (flr), *Millán E. 185* (FCME); Mpio. Chilpancingo de los Bravo, NW de Omiltemi en dirección a la toma de agua de la Cañada de la Perra, 2120 m, bosque mesófilo de montaña, *Ocampo 406* (FCME).

These two collections add to the four previously known for this rare species endemic to Guerrero (Daniel 1999d). Five occur on the western slopes of Cerro Teotepec in a region of ca. 11 km^2, whereas *Ocampo 406* occurs ca. 53 km to the northeast (Figure 4) in the Parque Ecológico Estatal Omiltemi. Corollas of this species are noted to be red and white. Another collection that almost certainly pertains to *S. guerrerensis* (*R. González Flores 579* at MEXU-image! ca. 17°32'18.41"N, 099°43'3.70"W), also from the Parque Ecológico Estatal Omiltemi, has externally pubescent corollas that appear to be bi-colored with a reddish color proximally and a much lighter color (whitish) distally.

STENOSTEPHANUS HARLEYI (Wassh.) T.F. Daniel

Guerrero: Mpio. Leonardo Bravo, 14 km adelante de Carrizal de Bravos [Corral de Bravo], sobre al camino que va de Carrizal a Puerto de Gallo, [ca. 17°34'4.82"N, 099°52'40.94"W], 2400 m, bosque mesófilo, 29 IX 1982 (flr, frt), *Contreras N. 1273* (FCME); Mpio. Coyuca de Catalán, 700–800 m W de El Aguacate, 17°42'24.8"N, 100°51'02.6"W, 2221 m, bosque mesófilo de montaña, 12 X 2002 (flr, frt), *González-Gallegos & Cornejo 2859* (CIIDIR, HUAP-image); Mpio. Leonardo Bravo, Chichihualco, 23 km SW de Filo de Caballo hacia a Atoyac, [ca. 17°33'41.89"N, 099°52'51.21"W], 2300 m, bosque mesófilo de montaña, 15 VIII 1984 (flr), *Lab. Biogeografía 1392* (FCME).

The vouchers listed above represent collections of *Stenostephanus harleyi* in addition to the two previously known from Guerrero (Daniel 1999d, 2013). Four occur in the same general region of mesophytic montane forest at relatively high elevations (2230–2500 meters) in the central Sierra Madre Sur of Guerrero (Figure 4). *González-Gallegos & Cornejo 2859* extends the range of this species ca. 104 km to the west in the Sierra Madre Sur. Plants were noted to be scarce at the site of *Contreras N. 1273*, and to be growing epiphytically on *Quercus*. Plants at the site of *González-Gallegos & Cornejo 2859* confirm the pink-purple color of corollas in this species (Figure 1H) and were noted to be locally abundant.

Additional collections of *Stenostephanus* from Guerrero reveal greater intraspecific morphological diversity than was previously known. Daniel's (1999d: 70) identification key to them is now outdated and a revised key is offered below. It appears likely that the sole collection treated as *S. haematodes* (Schltdl.) T.F. Daniel from Guerrero (i.e., *Hinton et al. 10758* at ARIZ, K, BR, F, G, GH, LL, MO, NY, TEX, US), which is well out of the range of that species, might pertain instead to either *S. guerrerensis* or *S. harleyi*. Unlike plants of *S. haematodes* from eastern Mexico, corollas of *Hinton et al. 10758* lack a conspicuous and narrowly cylindric proximal portion of the tube (usually ca. 4–7 mm long) that ± abruptly expands distally into the throat. Like both *S. guerrerensis* and *S. harleyi*, the corolla tubes of *Hinton et al. 10758*, are inconspicuous (if distinct, then up to 2 mm long) and ± gradually expand into the throat. The red color of corollas noted on the label of Hinton's collection (if

accurate) suggests *S. guerrerensis*, which has red and white corollas. However, capsules of Hinton's collection are glabrous like those of *S. harleyi*. Indeed, it resembles that species in most features, and it occurs in the vicinity (i.e., somewhere between 10 to 30 km distant) of another collection of that species. *Hinton et al. 10758* was originally identified as *S. gracilis* Nees, a synonym of *S. haematodes*. Hinton et al. (2019) listed the collection as *S. gracilis* (Oerst.) T.F. Daniel, a different species currently known only from Chiapas and Costa Rica (Daniel 1999d). Thus, the identity of *Hinton et al. 10758*, though likely *S. harleyi*, will require additional study to best determine its taxonomic affinities.

1. Calyx with abaxial surface pubescent with eglandular and glandular trichomes; corolla externally pubescent with eglandular trichomes; capsule pubescent with eglandular trichomes; pollen globose-elongate ..... **Stenostephanus guerrerensis**
1. Calyx with abaxial surface glabrous or pubescent with eglandular trichomes only; corolla externally glabrous; capsule glabrous; pollen globose-elliptic
    2. Corolla "red" [?], calyx lobes linear to lance-linear ..... **Hinton 10758**
    2. Corolla pinkish to purplish with internal surface of lobes of upper lip whitish; calyx lobes lance-subulate ..... **Stenostephanus harleyi**

ACKNOWLEDGEMENTS

For providing access, hospitality, and/or loans we thank the staffs of following herbaria: A, B, BM, C, CAS, CIIDIR, EBUM, F, FCME, G, GH, IBUG, IEB, K, MEXU, MICH, MO, NY, and US. We gratefully acknowledge the assistance of Rosalinda Medina Lemos, Victor Steinmann, Shelly McMahon, Ricardo Kriebel, and George Yatskievych. We thank Victor Steinmann and Barry Hammel for providing images and permitting their use. We also thank Bodo Nuñez Oberg, who photographed and uploaded the photographs of *Holographis pelori*a as an iNaturalist observation. Mary Butterwick kindly reviewed the manuscript.

LITERATURE CITED

Carnevali Fernández-Concha, G., J.L. Tapia-Muñoz, R. Duno de Stefano, and I.M. Ramírez Morillo (Editores Generales). 2010. Flora Ilustrada de la Península de Yucatán: Listado Florístico. Centro de Investigación Científica de Yucatán, A. C., Mérida, Yucatán, México. <https://www.cicy.mx/sitios/flora%20digital/documentos/Listado_floristico.pdf>

Daniel, T.F. 1984. New and reconsidered Mexican Acanthaceae. Madroño 31: 86–92.

Daniel, T.F. 1988. Three new species of *Holographis* (Acanthaceae) from Mexico. Proc. Calif. Acad. Sci. 46: 73–81.

Daniel, T.F. 1990. New and reconsidered Mexican Acanthaceae. IV. Proc. Calif. Acad. Sci. 46: 279–287.

Daniel, T.F. 1995. Acanthaceae. Flora of Chiapas 4: 1–158. <https://www.biodiversitylibrary.org/item/264706#page/3/mode/1up>

Daniel, T.F. 1996. New and reconsidered Mexican Acanthaceae. VII. Polibotánica 2: 1–9.

Daniel, T.F. 1999a. Acanthaceae A.L. Juss. Flora del Valle de Tehuacán-Cuicatlán 28: 3–102. <https://www.biodiversitylibrary.org/item/228501#page/6/mode/1up>

Daniel, T.F. 1999b. Taxonomic and distributional notes on Neotropical *Justicia* (Acanthaceae). Proc. Calif. Acad. Sci. 51: 483–492.

Daniel, T.F. 1999c. Nuevos registros estatales de Acanthaceae en México. Bol., Inst. Bot. Univ. Guadalajara 7: 51–59.

Daniel, T.F. 1999d. Revision of *Stenostephanus* (Acanthaceae) in Mexico. Contr. Univ. Michigan Herb. 22: 47–93.

Daniel, T.F. 2004. Further range extensions of Mexican Acanthaceae. Polibotánica 18: 1–12.

Daniel, T.F. 2008 ("2007"). Notes on the distributions of some Mexican Acanthaceae. Ibugana, Bol., Inst. Bot. Univ. Guadalajara 15: 13–22.

Daniel, T.F. 2010. Catalog of Guatemalan Acanthaceae: Taxonomy, ecology, and conservation. Proc. Calif. Acad. Sci. 61: 291–379.

Daniel, T.F. 2013. Mexican Acanthaceae: Updated summary, new, or noteworthy distribution records, and a list of taxa in Jalisco, Mexico. Ibugana 4: 3–15.

Daniel, T.F. 2016. New distribution records for Acanthaceae in Mexico. Phytoneuron 2016-26: 1-13.

Daniel, T.F. 2019. New and reconsidered Mexican Acanthaceae XIII. *Justicia*. Proc. Calif. Acad. Sci. 66: 61–85. <http://zenodo.org/record/13157250>

Daniel, T.F. 2022. Donald Pinkava's studies on the vascular flora of the Bolsón de Cuatro Ciénegas in the Chihuahuan Desert, updates, and taxonomic information on Acanthaceae in the region. J. Bot. Res. Inst. Texas 16: 281–295. <https://doi.org/10.17348/jbrit.v16.i1.1233>

Daniel, T.F. 2024 ("2022"). Acanthaceae of the Nueva Galicia region of west-central Mexico: Key to genera, species list with distributions by state, and a new species—*Justicia wilburii*. Rhodora 124: 228–253. <https://doi.org/10.3119/21-19>

Daniel, T.F. and S. Acosta Castellanos. 2003. Acanthaceae. Flora del Bajío y de Regiones Adyacentes 117: 1–173. <https://doi.org/10.21829/fb.193.2003.117>

Daniel, T.F., L.J. García-Morales, and A. Mora-Olivo. 2021. Taxonomic and photographic guide to the Acanthaceae of Tamaulipas, Mexico. Proc. Calif. Acad. Sci. 67: 185–228. <https://www.researchgate.net/publication/357381434_Taxonomic_and_Photographic_Guide_to_the_Acanthaceae_of_Tamaulipas_Mexico>

Daniel, T.F. and E.A. Tripp. 2018. *Louteridium* (Acanthaceae: Acanthoideae: Ruellieae: Trichantherinae): Taxonomy, phylogeny, reproductive biology, and conservation. Proc. Calif. Acad. Sci. *65*: 41-106. <https://doi.org/10.5281/zenodo.13155705>

Flora e Funga do Brasil. 2024. Jardim Botânico do Rio de Janeiro. <http://floradobrasil.jbrj.gov.br/>

González Flores, R.E. 1998. La Familia Acanthaceae en el Estado de Nayarit, México. Tesis, Maestria en Ciéncias (Biologia Vegetal), Facultad de Ciéncias, Universidad Nacional Autónoma de México. <http://132.248.9.195/pdbis/258118/258118.pdf>

Hinton, J. and G.S. Hinton. 1995. Checklist of Hinton's collections of the flora of south-central Nuevo León and adjacent Coahuila. Acta Bot. Mex. 30: 41–112.

Hinton, G.S., J.L. Villaseñor, and E. Ortiz. 2019. The Hintons' Legacy to the knowledge of the flora of Mexico. Bot. Sci. 97: 447–538. <https://doi.org/10.17129/botsci.2210>

Leonard, E.C. 1938. X–Contributions to the flora of tropical America: XXXIV. Plantae Hintonianae: VI. Bull. Misc. Inform. Kew 1938: 59–73.

Martínez-De La Cruz, I., J.L. Villaseñor, L.I. Aguilera Gómez, and M. Rubí Arriaga. 2018. Angiospermas nativas documentadas en la literatura para el Estado de México, México. Acta Bot. Mex. 124. <https://abm.ojs.inecol.mx/index.php/abm/article/view/1273/html>

Sosa, V. and A. Gómez-Pompa. 1994. Lista floristica. Flora de Veracruz 82: 1–245. <https://doi.org/10.21829/fv.398.1994.82>

Villarreal Quintanilla, J.A. and E. Estrada Castillón. 2008. Listados Florísticos de México XXIV. Flora de Nuevo León. Instituto de Biología, Universidad Nacional Autónoma de Mexico, México, D.F.

Villaseñor, J.L. 2016. Checklist of the native vascular plants of Mexico. Rev. Mex. Biodivers. 87: 559–802. < https://doi.org/10.1016/j.rmb.2016.06.017>

Villaseñor, J.L., E. Rotiz, and A. Sánchez-González. 2022. Riqueza y distribución de la flora vascular del estado de Hidalgo, México. Rev. Mex. Biodivers. 93: e933920. <https://doi.org/10.22201/ib.20078706e.2022.93.3920>

Wasshausen, D.C. 2013. Acanthaceae. Flora of Ecuador 89: 3–325.

Zamudio, S. and R. Galván. 2011. La diversidad vegetal del estado de Guanajuato, Mexico. Flora del Bajío y de Regiones Adyacentes 27: 1–108. <https://doi.org/10.21829/fb.142.2011.XXVII>

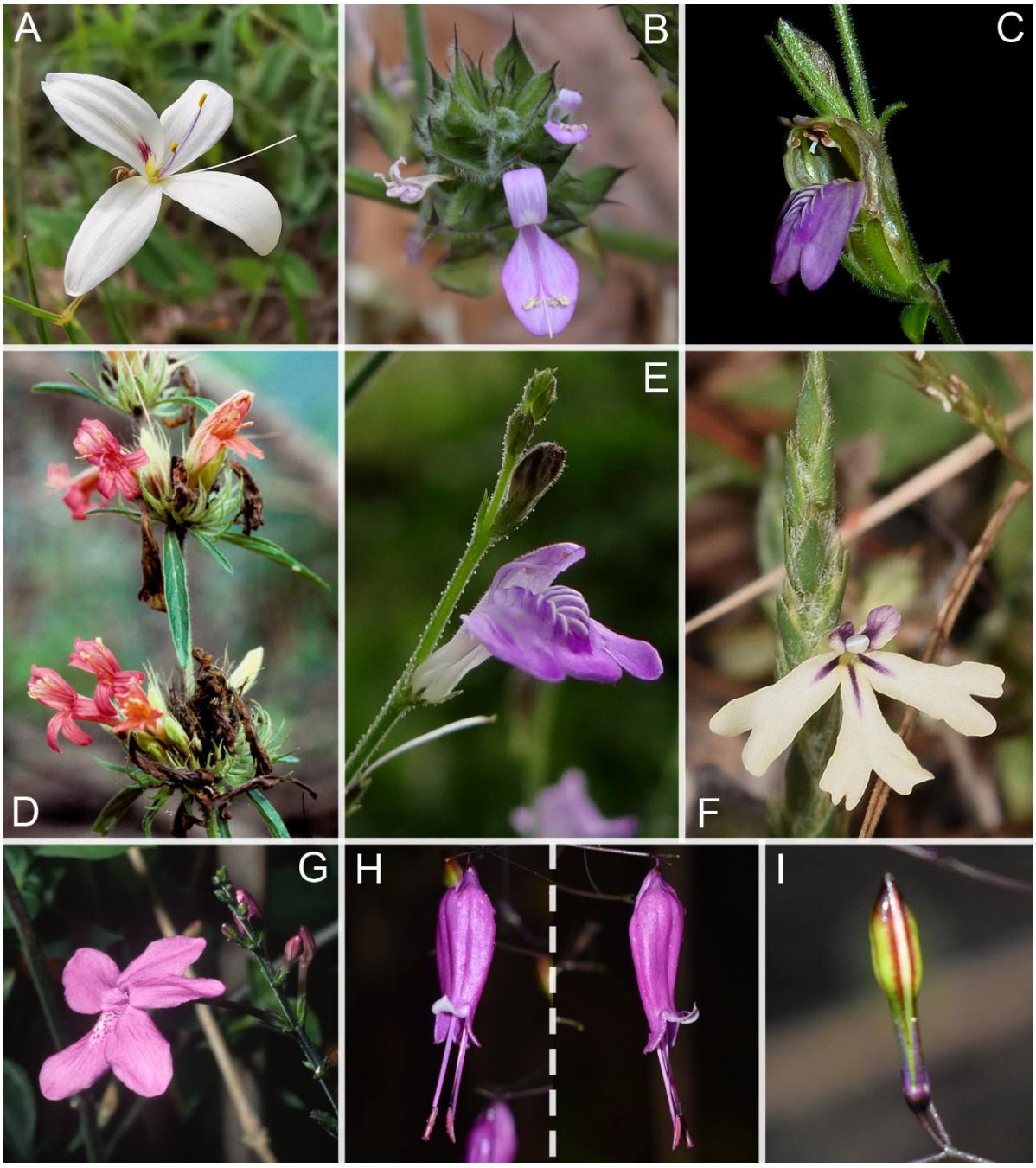

Figure 1. Acanthaceae images (photos by T. Daniel except as noted). A. *Carlowrightia huicholiana* (photo by P. Carrillo-Reyes). B. *Dicliptera unguiculata*. C. *Justicia wilburii*. D. *Dyschoriste angustifolia*. E. *Justicia pectorialis* (photo by B. Hammel). F. *Elytraria mexicana* (photo by D. Denham-Logsdon). G. *Pseuderanthemum cuspidatum*. H, I. *Stenostephanus harleyi*, two views of corolla and capsule (photos by J. González-Gallegos).

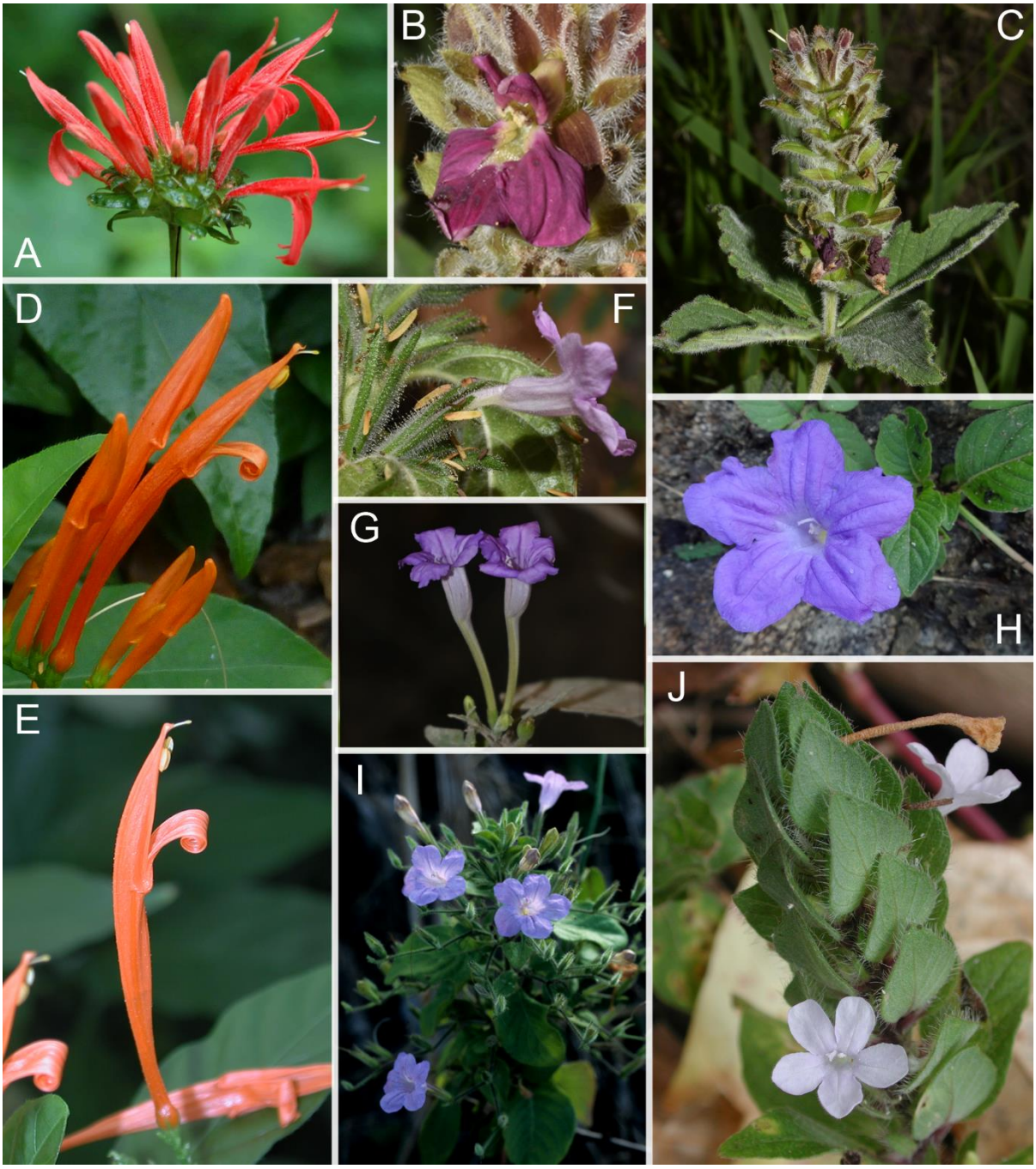

Figure 2. Acanthaceae images. A. *Justicia matudae* (photo by V. Steinmann). B, C. *Holographis peloria*, flower and fruiting inflorescence (photos by J. González-Gallegos). D, E. *Justicia spicigera*. F. *Ruellia galeottii* (photo by D. Denham-Logsdon). G. *Ruellia oaxacana* (photo by D. Figueroa). H. *Ruellia hookeriana* (photo by J. González-Gallegos). I *Ruellia paniculata*. J. *Ruellia blechum*.

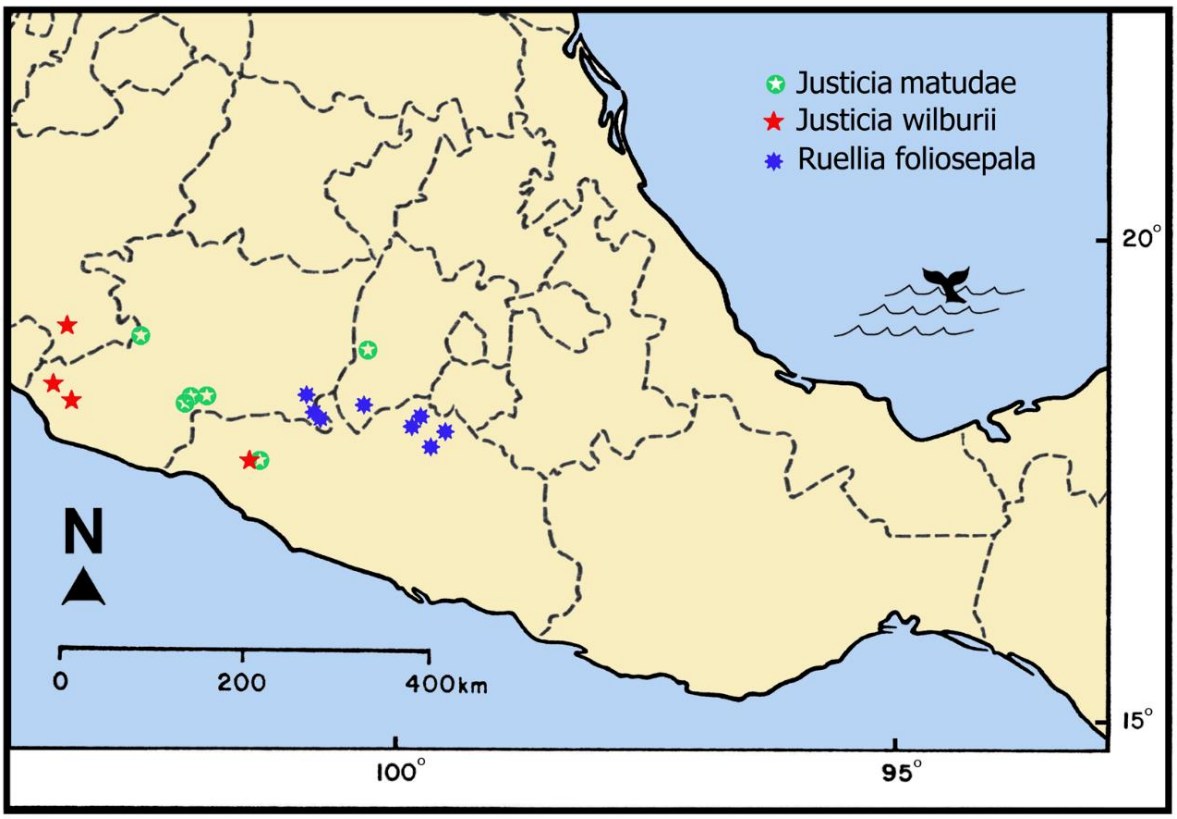

Figure 3. Map of central and southern Mexico showing distributions of *Justicia matudae*, *J. wilburii*, and *Ruellia foliosepala*.

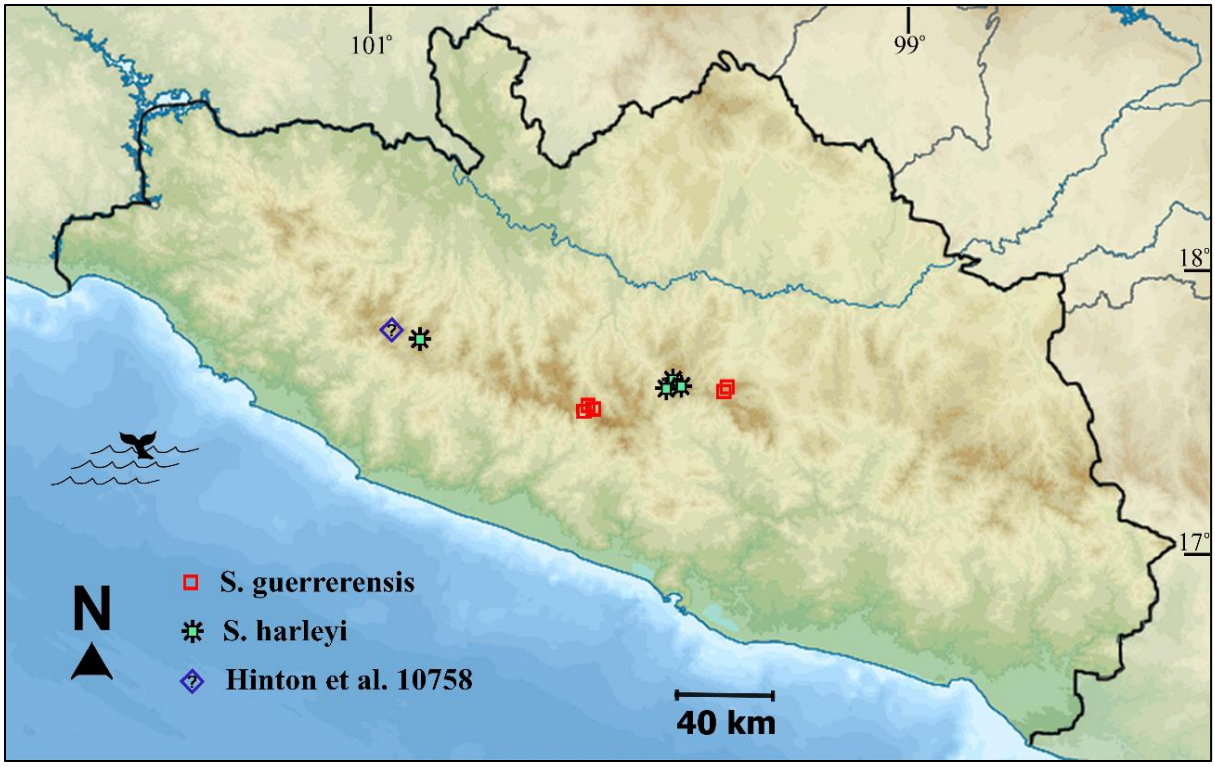

Figure 4. Map of a portion of southwestern Mexico showing distributions of species of *Stenostephanus* in the state of Guerrero. The identity of *Hinton et al. 10758* remains unconfirmed, but likely corresponds to *S. harleyi*.