

***Justicia cuixmalensis*, a New Species of Acanthaceae
from West-central Mexico**

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A collection from the Chamela-Cuixmala region of southwestern Jalisco, Mexico is described as a new species, *Justicia cuixmalensis*. It is distinctive among Mexican *Justicia* by the combination of its flowers that are borne on peduncles and pedicels in the leaf axils, possess a 4-lobed calyx with broad and ovate lobes, and have red-orange corollas. Infrageneric affinities of the new species are discussed, and illustrations of it are provided.

Se describe una colección de la región de Chamela-Cuixmala en el sudoeste de Jalisco, México como especie nueva, *Justicia cuixmalensis*. Se distingue entre otras especies de *Justicia* en México por la combinación de sus flores que se presentan en las axilas de las hojas en pedúnculos y pedicelos, posean un cáliz 4-lobulado con los lóbulos amplios y ovales, y tiene corollas rojo-anaranjadas. Las afinidades infra-genéricas de la nueva especie se discuten, y se proporciona una ilustración.

Justicia L. is the largest genus of Acanthaceae with more than 700 species currently recognized worldwide. More than 100 species are known from Mexico, and numerous others have been collected there, but have yet to be described (Daniel 2007). One of these from the Chamela-Cuixmala region on and near the Pacific coast of Jalisco is described below. The sole collection of this species was recognized as representing a distinctive and previously undescribed *Justicia* by us in the early 1990s. Because the collection lacks fruits, we delayed publishing a description in the hope that additional collections with fruits would become available. That has not happened. Because of the distinctiveness of this species among Mexican *Justicia*, and the need to treat it in various inventory projects, we feel that it should be published based on the single known collection.

Lott (1993, 2002) discussed the location and boundaries of the ca. 13,142-hectare Reserva de la Biósfera Chamela-Cuixmala of southwestern Jalisco, and subsequently accounted for 1,149 species of vascular plants there (Lott 2002). The region, which is dominated by tropical deciduous forest, is particularly rich in Acanthaceae. Twenty-eight species of the family have been recorded from the Chamela-Cuixmala region (Lott 1993, 2002), including nine species of *Justicia*.

***Justicia cuixmalensis* T.F. Daniel & E.J. Lott, sp. nov.**

TYPE.—MEXICO. **Jalisco:** Mpio. La Huerta, Rancho Cuixmala, rd. to Cumbres along Río Cuixmala near Cumbres 2, 19°27'N, 104°56'W, 12 Jul 1991, *E. Lott et al.* 3733 (holotype: CAS! isotype: MO!). Figure 1.

Frutex usque ad 7.5 dm altus. Folia petiolata, laminae ovatae vel ellipticae, 16–39 mm longae,

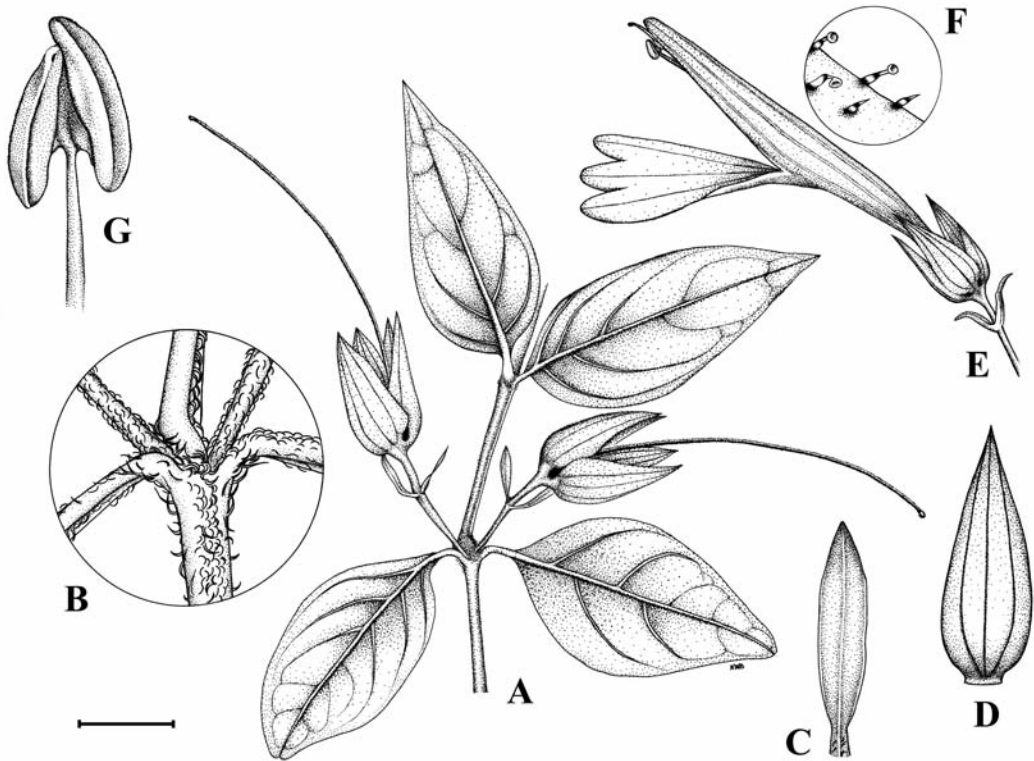


FIGURE 1. *Justicia cuixmalensis* (Lott et al. 3733). A. Habit. B. Node with peduncles. C. Bracteole. D. Calyx lobe. E. Flower. F. External surface of corolla. G. Distal portion of stamen with anthers. Scale for A = 9 mm, for B = 2 mm, for C = 1.8 mm, for D = 4.2 mm, for E = 7.5 mm, for F = 0.5 mm, and for G = 1.2 mm. Drawn by Nicole Bollinger.

10–20 mm latae, 1.4–2.5-plo longiores quam latiores. Flores e foliorum axillis orta, solitarii, pedunculati et pedicellati. Calyx 4-lobus, 8.5–14 mm longus, lobis homomorphis, ovatis, 2.5–5.1 mm latis. Corolla aurantiaca-rubra, 32–37 mm longa, extus pubescens trichomatibus glandulosis et eglandulosis. Stamina 15–18 mm longa, thecis 1.8–2.5 mm longis, glabris, subpariter insertis, basi ecalcaratis. Pollen granae 2-aperturatae. Capsula ignota.

Shrub to 7.5 dm tall; young stems quadrate, bifariously pubescent with retrorse, eglandular trichomes 0.2–0.7 mm long. Leaves petiolate; petioles to 3 mm long; blades ovate to elliptic, 16–39 mm long, 10–20 mm wide, 1.4–2.5 times longer than wide, rounded to acute to subacuminate at apex, rounded to acute at base, surfaces sparsely pubescent (mostly along major veins) with antrorse, eglandular trichomes to 0.3 mm long. Flowers solitary, pedunculate and pedicellate, opposite in leaf axils, peduncles 3–11 mm long, evenly pubescent with cauline type trichomes, pedicels to 3.5 mm long, pubescent like peduncles. Bracteoles lance-linear to linear (to linear-elliptic), 3–6 mm long, 0.3–0.7 (–1.2) mm wide, abaxial surface glabrous or pubescent proximally with antrorse eglandular trichomes. Calyx 4-lobed, 8.5–14 mm long, lobes ovate, 8–13.5 mm long, 2.5–5.1 mm wide, abaxially pubescent like bracteoles. Corolla orange-red, 32–37 mm long, externally pubescent with glandular and eglandular trichomes 0.1–0.2 mm long, tube 15–17 mm long, distally ampliate, upper lip 15–18 mm long, apically entire, lower lip 15–19 mm long, lobes 3–4.5 mm long, 3–4 mm wide. Stamens 15–18 mm long, filaments glabrous, thecae subequally

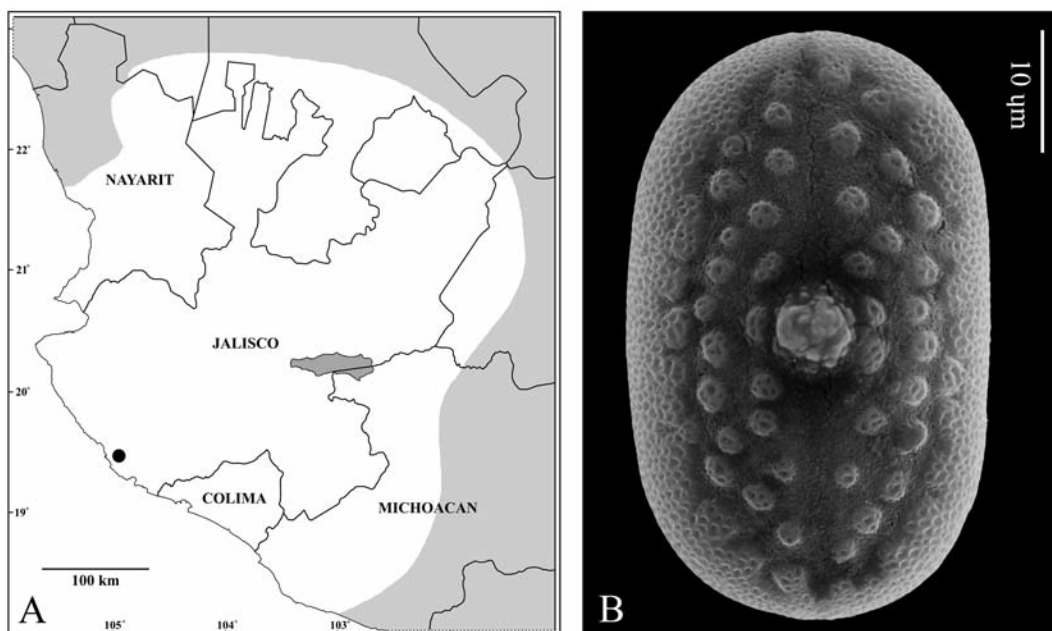


FIGURE 2. Distribution and pollen of *Justicia cuixmalensis*. A. Map of west-central Mexico showing the Nueva Galicia region and location of the sole collection of the species. B. Pollen (Lott *et al.* 3733), apertural view.

inserted, subsagittate, 1.8–2.5 mm long, glabrous, lacking basal appendages; pollen (Fig. 2B) 2-aperturate, apertures flanked on each side by 2 rows of insulae (often with adjacent peninsulae as well), exine between “trema regions” reticulate. Style 33–37 mm long, glabrous, stigma 0.2–0.3 mm long, lobes indistinct. Capsules not seen.

PHENOLOGY.— Flowering: July; fruiting: unknown.

DISTRIBUTION.— West-central Mexico (Jalisco; Fig. 2A); plants occur in tropical subdeciduous forest at elevations less than 100 meters.

Justicia cuixmalensis is distinctive among Mexican *Justicia* by its 4-lobed calyx with broad, ovate lobes. Putative relatives are not readily apparent. Based on Graham’s (1988) infrageneric classification, the species shows some similarities (e.g., habit and corolla color and size) to those in the American section *Drejerella* (Lindau) V.A.W. Graham. It differs from her description of that section by its 4-lobed (vs. 5-lobed) calyx, lack (vs. presence) of thecal appendages, and 2-aperturate (vs. 3-aperturate) pollen. It also shows affinities to the American section *Simonisia* (Nees) V.A.W. Graham (e.g., habit, number of pollen apertures, and corolla form and size). Species included in that section differ by having 5-lobed calyces and purple to lilac corollas. Graham’s classification fails to accommodate numerous other species of *Justicia* from the New World (e.g., Daniel 1999, 2004). Ultimately, its inflorescence structure (for solitary flowers, Graham apparently only found sessile ones in the genus) and the lack of capsules and seeds limit comprehensive morphological comparisons to other species of *Justicia*.

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LITERATURE CITED

- DANIEL, T.F. 1999. Taxonomic and distributional notes on Neotropical *Justicia* (Acanthaceae). *Proceedings of the California Academy of Sciences*, ser. 4, 51(15):483–492.
- DANIEL, T.F. 2004. A synopsis of *Justicia* section *Mesoamericanae* (Acanthaceae). *Proceedings of the California Academy of Sciences*, ser. 4, 55(8):174–183.
- DANIEL, T.F. 2007. New taxa of *Justicia* (Acanthaceae) from southern Mexico and Guatemala. *Contributions from the University of Michigan Herbarium* 25:179–189.
- GRAHAM, V.A.W. 1988. Delimitation and infra-generic classification of *Justicia* (Acanthaceae). *Kew Bulletin* 43:551–624.
- LOTT, E.J. 1993. Annotated checklist of the vascular flora of the Chamela Bay region, Jalisco, Mexico. *Occasional Papers of the California Academy of Sciences* (148):1–60.
- LOTT, E.J. 2002. Lista anotada de las plantas vasculares de Chamela-Cuixmala. Pages 99–136 in F.A. Noguera et al., eds., *Historia Natural de Chamela*. Instituto de Biología, Universidad Nacional Autónoma de México, Cd. México.