

A new species of *Cordia* (Cordiaceae) for the state of Minas Gerais, Brazil

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Abstract

Guimarães, E.F., Ranga, N.T. & Melo, J.I.M. 2016. A new species of *Cordia* (Cordiaceae) for the state of Minas Gerais, Brazil. *Anales Jard. Bot. Madrid* 73(1): e034.

A new species of the genus *Cordia* (Cordiaceae), *C. kuhlmannii* E.F. Guim., N.T. Ranga & J.I.M. Melo, for the state of Minas Gerais, Brazil is described and illustrated. The species, belonging to the section *Gerascanthus* is characterized mainly by irregular calyx lobes, corolla with narrow tube, stamens with glabrate bases and long branches of the style.

Keywords: Boraginales, Cordiaceae, *Gerascanthus*, South America, taxonomy.

Resumen

Guimarães, E.F., Ranga, N.T. & Melo, J.I.M. 2016. Una nueva especie de *Cordia* (Cordiaceae) para el estado de Minas Gerais, Brasil. *Anales Jard. Bot. Madrid* 73(1): e034.

Se describe e ilustra una nueva especie del género *Cordia* (Cordiaceae), *C. kuhlmannii* E.F. Guim., N.T. Ranga & J.I.M. Melo, para el estado de Minas Gerais, Brasil. La especie pertenece a la sección *Gerascanthus* y es caracterizada, principalmente, por presentar los lóbulos del cáliz irregulares, la corola con tubo estrecho, los estambres glabros en la base y las ramas de los estilos largas, de cerca de 5 mm.

Palabras clave: América del Sur, Boraginales, Cordiaceae, *Gerascanthus*, taxonomía.

INTRODUCTION

The generic limits of *Cordia* L. were recently reviewed by Gottschling & Miller (2006), who subordinated the species of *Auxemma* Miers and *Patagonula* L. to this genus, and by Miller & Gottschling (2007), who revalidated *Varronia* P. Browne.

Despite the segregation of species of *Varronia*, *Cordia* is still the most representative genus of Cordiaceae, including approximately 250 species distributed in tropical and subtropical regions, being particularly well represented in the American continent (Miller & Gottschling, 2007).

The genus *Cordia sensu lato* encompasses 350 species (Taroda & al., 2012) and, in the new world, its main center of taxonomic diversification is Brazil, with 52 species, of which 28 are endemic to the flora of the country (Melo & al., 2014).

Regarding species of *Cordia* most are trees or shrubs, with branches showing simple or stellate trichomes; alternate, simple leaves; flowers grouped in a panicle or thyrsoid inflorescence, axillary or terminal, lax or congested, generally with tubular to campanulate calyx, externally smooth or costate, 3-10-dentate, corolla funnel-shaped or hypocrateriform, white, yellow or orange, with included or excluded stamens and the ovary bilocular with 2 ovules per locule, terminal style split at the apex, with 4 stigmatic branches; the fruit is a drupe-like, carrying 1 seed, with persistent calyx.

The genus *Cordia* has been revised for Brazil in its traditional concept (Taroda & Gibbs, 1986a; 1986b; 1987) as a whole or, in the *sensu stricto*, in part (Stapf, 2010). More recently, a revision of *Cordia* sect. *Gerascanthus* P. Browne

was elaborated by Miller (2013). According to this same author (2013), their species are characterized by flowers with tubular, ribbed calyces and, marcescent corollas surrounding the developing fruit, aiding in its wind dispersal, and fruits ellipsoid, single-seeded, with a fibrous wall. However, a new species, *C. kuhlmannii* E.F. Guim., N.T. Ranga & J.I.M. Melo, belonging to *Cordia* sect. *Gerascanthus* is here described and illustrated for the state of Minas Gerais, southeastern Brazil, being recognized for lobes of calyx irregular, corolla with narrow tube, stamens with glabrate base, and long style branches.

MATERIAL AND METHODS

Exsiccatae deposited in the major herbaria of the state of Rio de Janeiro were analyzed: GUA, HB, R, RB, RFA and RUSU (Thiers, 2014). For the taxonomic description, the works of Hickey (1974) and Weberling (1995) were consulted for the standardization of morphological terminology. Data on geographical distribution, habitat and flowering are presented, in addition to images containing the species diagnostic characters, and also an identification key of the Brazilian representatives of the section *Gerascanthus*, based on specimens of the herbaria of the state of Rio de Janeiro.

RESULTS AND DISCUSSION

The section *Gerascanthus* comprises 23 species distributed in the Neotropics (Miller, 2013) and, of these, six species have been recorded so far for Brazil (Miller, 2013; Melo & al., 2014). According to Stapf (2010), phylogenetic

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Table 1. Comparative features for Brazilian species of *Cordia* sect. *Gerascanthus*.

Species feature	<i>C. alliodora</i>	<i>C. glabrata</i>	<i>C. goeldiana</i>	<i>C. insignis</i>	<i>C. kuhlmannii</i>	<i>C. latiloba</i>	<i>C. trichotoma</i>
Trichomes types	Simple and stellate	Simple	Simple	Simple	Simple	Simple or absent	Stellate
Calyx (form)	Tubular-cylindrical	Tubular-cylindrical	Campanulate	Tubular-cylindrical	Campanulate	Campanulate	Tubular-cylindrical
Calyx (base)	Acute	Acute	Acute	Acute	Obtuse or rounded	Acute	Acute
Calyx	Evidently costate	Evidently costate	Smooth or slightly costate	Evidently costate	Smooth or slightly costate	Smooth or slightly costate	Evidently costate
Calyx (length)	5-7.5 mm	9-13 mm	7-13 mm	17-24 mm	12-15 mm	10-13 mm	7-10 mm
Corolla (lobes form)	Elliptic, oblong	Elliptic, oblong	Elliptic, oblong	Oblong	Triangular-rhombic	Triangular-rhombic	Elliptic, oblong
Corolla (lobes measurements)	6×3 mm	10×15 mm	11-17×5.5-8.5 mm	11×11 mm	9-15×12-13 mm	10×11 mm	9-11×4-7.5 mm
Corolla (length)	11-14 mm	24-34 mm	22.5-32 mm	34-52 mm	35-40 mm	27-35 mm	12-24 mm
Corolla (tube length)	3-6.5 mm	8-13 mm	5-10 mm	16-25 mm	15-18 mm	10-12 mm	7-9.5 mm
Corolla (apex)	Obtuse rounded	Obtuse rounded	Obtuse rounded	Obtuse rounded or acute	Acute	Triangular acute	Obtuse
Stamen (length)	5-5.5 mm	5.5-6 mm	5-12 mm	10-11 mm	9-10 mm	10-11 mm	10-11 mm
Stamen (filaments)	Pilose	Pilose	Pilose	Pilose	Glabrate	Pilose	Pilose
Style (base)	Slender	Slender	Slender	Slender	With discoid thickening	Slender	Slender
Style branches (length)	2-3 mm	≤0.8 mm	Sessile or ≤0.8 mm	≤0.8 mm	4-5 mm	1-1.3 mm	5-7 mm

studies indicate that the section is monophyletic, being well supported by morphological and molecular data.

In general its species are trees, with petiolate leaves, blade glabrous or with simple or stellate trichomes, margin entire, venation brochidodromous, leathery except for the species described here, which shows a membranous to papery blade. The flowers are gathered in large panicle-like inflorescences, the calyces are cylindrical and narrow in most species, distinctly costate or, less often, campanulate with regular or irregular lobes and the corolla is showy, white, except *C. insignis*, which is brownish to reddish.

Key to the Brazilian species of section *Gerascanthus* (Cordiaceae: *Cordia*):

1. Calyx campanulate, smooth or slightly costate 2
1. Calyx tubular-cylindrical, narrow, evidently costate .. 4
2. Lobes of calyx irregular; corolla with narrow tube; stamens with glabrous filaments; style presenting base discoid thickened; long style branches, ca. 5 mm long ***C. kuhlmannii***
2. Lobes of calyx regular; corolla with wide tube; stamens with pilose filaments; style without base discoid nor thickened; short style branches, smaller than 5 mm long 3
3. Lobes of corolla with obtuse or retuse apex *C. goeldiana*

3. Lobes of corolla with acute apex *C. latiloba*
4. Leaf blade with stellate trichomes on both sides 5
4. Leaf blade glabrous or with simple trichomes on both sides 6
5. Corolla tube up to the base of stamens less than 5 mm long; corolla lobes 3.5-5 mm long *C. alliodora*
5. Corolla tube up to the base of stamens greater than 5 mm long; corolla lobes greater than 5 mm long *C. trichotoma*
6. Tube of the corolla exceeding the calyx length, corolla 3.5 to 5.2 mm long *C. insignis*
6. Tube of the corolla equal or shorter than the calyx, corolla 2-3 cm long *C. glabrata*

Cordia kuhlmannii E.F. Guim., N.T. Ranga & J.I.M. Melo, **sp. nov.** Iconography: Fig. 1.

TYPE: [Brazil.] Minas Gerais, Córrego do Capim, Figueira, Rio Doce, 10 October 1930, *J.G. Kublmann 339* (holotype, RB).

Cordia goeldiana affinis sed, a qua praecipue differt calyx tubuloso-cylindrico, angustus, manifeste costatus, lobis irregularibus praeditus, corolla tubo angusto, stamina ad basin glabra et rami stylorum ca. 5 mm quam corolla longiores.

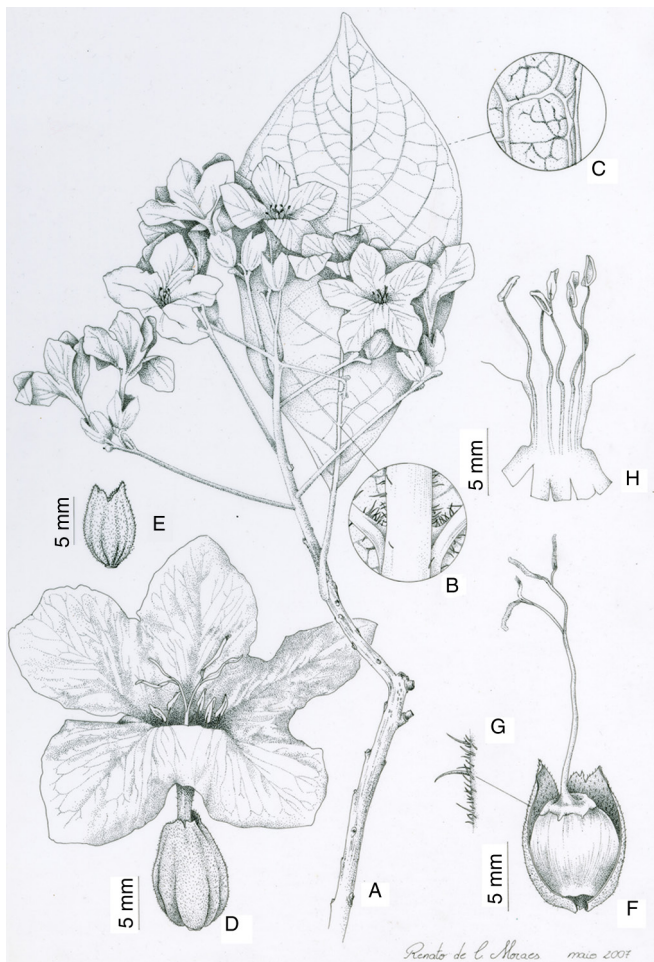


Fig. 1. *Cordia kuhlmannii*. **A**, reproductive branch; **B**, detail of the indumentum of the branch; **C**, detail of the foliar venation; **D**, flower; **E**, calyx; **F**, calyx showing the gynoceium; **G**, detail of the indumentum of the outer portion of the calyx; **H**, corolla showing the androecium. Drawn by Renato de C. Moraes.

Tree, 10-15 m high, striated branches. Leaves peciolate, petiole 2-3.5 cm long; blade 14-16×5.5-10.5 cm, elliptic, glandulous, pubescent to glabrescent, with simple trichomes on primary and secondary veins, sometimes forming tufts in the vein axils, acute to decurrent base, obtuse or rarely acute apex, membranous to papery. Inflorescence paniculate, ferruginous, tomentose, wide, lax rachis. Flowers ca. 3.9 cm long. Calyx 1.2-1.5×0.7-0.9 cm, campanulate, irregularly lobed, slightly costate to the apex, sometimes to the middle, externally tomentose, internally pubescent. Corolla 3.0-3.5 cm long; tube ca. 2.2 cm long; lobes 0.9-1.5×1.0-1.3 cm, ovoid, triangular, rhombic, glabrous, acute; stamens ca. 1 cm long, glabrous filaments; ovary 1.2-1.5×0.5-0.7 cm, globose to elliptical, glabrous; style ca. 1.5 cm long, filiform, branches 4-5 mm long, presenting base thickened, discoid, similar to a stylopodium. Fruit not observed.

Distribution and habitat. The locality where the type specimen was collected (Figueira, Córrego do Capim, Rio Doce), over 80 years ago, currently corresponds to the city of Governador Valadares, formerly named as District of Santo Antonio da Figueira (IBGE, 2014). The species is known only from the type specimen, and for this reason it is considered endemic to the state of Minas Gerais.

Conservation status. *Cordia kuhlmannii* is probably endemic to Minas Gerais, considering that so far it is known

only from the type specimen collected in 1930. Since there are no other records for the species in the consulted herbaria, it may be classified in the ED category (endangered) according to the criteria of the International Union for Conservation Nature (IUCN, 2001).

This species fits into the section *Gerascanthus* for possessing a marcescent corolla during fructification. *Cordia kuhlmannii* is morphologically similar to *C. latiloba* and *C. goeldiana*, which also possess a campanulate calyx. However, it differs from the above mentioned species by having an urceolate calyx, i.e., with inflated base and narrow at the apex, as well as glabrous filaments at the base and the presence of a discoid expansion at the style base, similar to a stylopodium. According to Kuhlmann (*in sched.*), this tree is popularly called laurel and the wood was used in the manufacture of doors. The features of Brazilian species of *Cordia* section *Gerascanthus* are comparatively presented in Tab. 1.

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