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Cordia ramanujamii (Cordiaceae): new species from Tamil Nadu, India

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ABSTRACT: A new species of *Cordia* (Cordiaceae), *C. ramanujamii* is described and illustrated from Gingee Hills, Eastern Ghats of Tamil Nadu, India.

KEY WORDS: Boraginaceae, *Cordia ramanujamii*, Endemic, Eastern Ghats, TDEF, Villupuram.

INTRODUCTION

Cordia L. is the largest genus of the family Boraginaceae however, Gottschling *et al.* (2005) with their phylogenetic study elevated the subfamily: Cordiaceae into family status and they stated that '*Cordia* is a monophyletic genus'. This was supported by Weigned and Hilger (2010). Out of 350 species of *Cordia*, about 275 species (Miller, 2001; Gottschling and Miller, 2006) were distributed along the Neotropics and Pantropics, especially from Mexico and Central America, the West Indies and South America. In addition, about 50 species occur in Africa and Madagascar and only 25 species occur in Asia. It is also occurs in Australia, New Caledonia, Middle Africa, Guiana and Brazil. Some species are naturalized in various countries where they are sometimes cultivated for economic and medicinal importance. Time to time new species are also reported: two from Central America (Miller, 1988), three from the Guianas (Feuillet, 2003) and one from Tanzania (Vollesen, 2008). In Tamil Nadu only 12 species were recorded (Henry *et al*. 1987).

The ongoing botanical exploration along the Tropical Dry Evergreen Forest (TDEF) along the Coromandel Coast for the last two decade and as part of Ph.D. program a field visit was attempted at Pakkam Malai reserve forest near Gingee to find out the inclination of TDEF elements from the coast to up on the hills. During the survey, authors came across one interesting species of *Cordia* has found with *Cordia dichotoma* G. Forst. and *Cordia monoica* Roxb. On critical examination with published literatures (Matthew, 1983; Gamble, 1921) and by referring regional and national herbaria found that it was not yet described and named. The detailed descriptions, key, figures (1 and 2) and table (1) are provided to distinguish the morphological and reproductive characters between *C. ramanujamii* and *C. dichotoma*.

1a. Leaves 3-nerved at base; corolla tube longer than calyx, > 1cm long; stamens 6-7, filaments unequal; stigma equally 4-lobed; fruit 1.5 cm across …….. ***C. ramanujamii***
1b. Leaves peninnerved; corolla tube equal to calyx, < 1cm long; stamens 5, filaments equal; stigma 2-times forked; fruit 1 cm across..... ……***C. dichotoma***

TAXONOMIC TREATMENT

Cordia ramanujamii N. Balachandran & K. Rajendiran, ***sp. nov.*** Figs. 1 & 2.

Typus: **INDIA**, Tamil Nadu, Gingee 350m, Oct. 2, 2013, *N. Balachandran* 12812, holotype MH; isotype AURO, HIFP)

Small tree, to 2.5 m tall. Bark greyish-green, smooth. Branchlets slender, lenticellate, tender parts stellate tomentose. Petiole 0.5–1.8 cm long, canaliculate, pubescent when young, glabrous at maturity. Leaves elliptic-oblanceolate, 1.8–7.8×0.9–4 cm, acute-acuminate at apex and shortly thick apiculate, base oblique, obtuse, lower margin entire, upper margin distantly serrulate, 3-nerved at base, lateral nerves 2–4 pairs, glabrous above, scattered pilose hairy below, especially near the base below. Inflorescence a cyme, 5–7×4.5–5.6 cm. Flowers bisexual, 1.7×0.8 cm; calyx tube 8 - 10 mm long, tube leathery, rusty tomentose half above the tube and dense near lobes, lobes 6 (4+2), unequal, 1 mm long, ciliate, densely brown-silky villous within. Corolla 1.2–2 cm long, white, tube glabrous within and base; throat hyaline villous, lobes 6–7, 4 mm long. Stamens 6–7, unequal, 3(4) shorter and 3 longer, alternate each other; anthers oblong, 1.5 mm, sagitate at base, filaments hairy at base, attached near throat. Ovary glabrous, ellipsoid-oblong, 1.5–2 mm long; style 5–6 mm long, stigma 4, filiform, 8–10 mm long, slightly thickened at apex, glabrous. Fruit pale yellow, 1.7 cm across; Seed 1, 8–10 mm across.

Close allied with *C. dichotoma* but differs in as a small tree; bark smooth, greyish-green; leaves glabrous; longer calyx and corolla tube; stamens 6-7, filaments unequal; stigma 4, long, equal and filiform; fruits more than 1.5 cm across.

Flowering and Fruiting: July to December.

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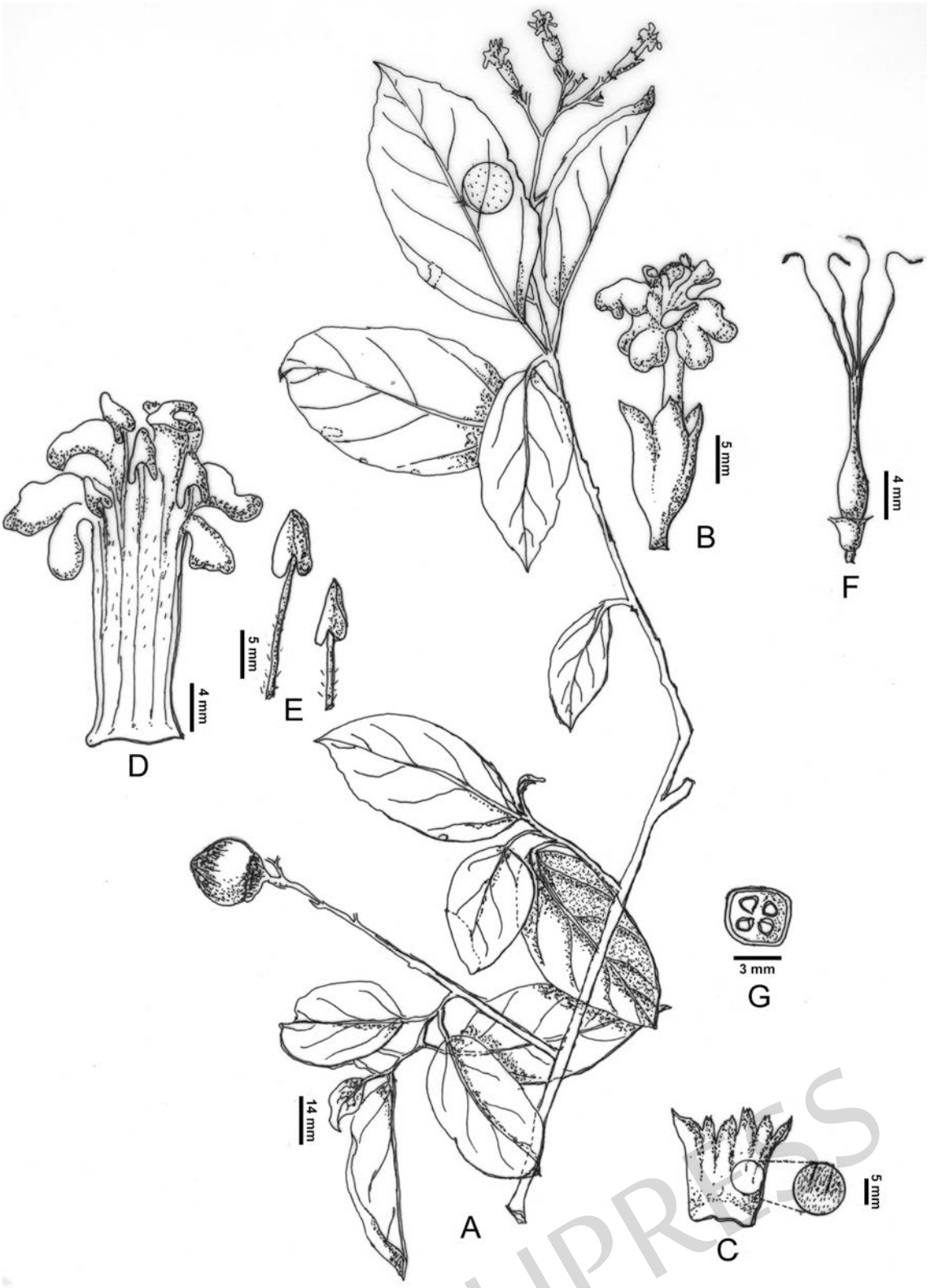


Fig. 1. ***Cordia ramanujamii*** **A**. Portion of plant, **B**. Flower, **C**. Calyx cut open, **D**. Corolla cut open, **E**. Stamen, **F**. Carpel, **G**. Ovary c.s.

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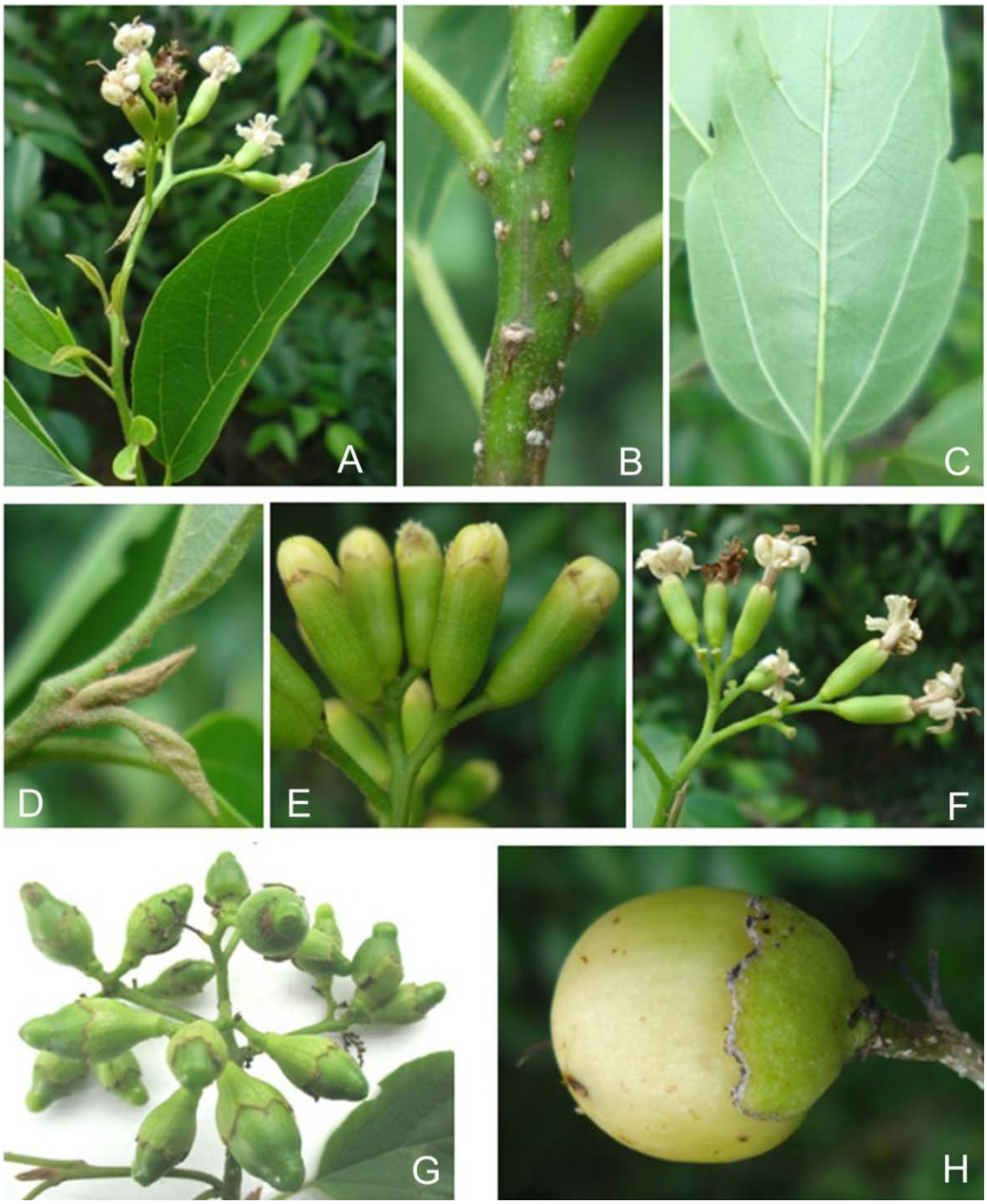


Fig. 2. ***Cordia ramanujamii***, **A**. Flowering branch, **B**. Lenticels, **C**. Leaf 3-nerved at base, **D**. Young leaf and tomentum, **E**. Flower buds showing long calyx tube, **F**. Inflorescence, **G**. Young fruits, **H**. Ripe fruit.

Distribution: Endemic to Eastern Ghats of Tamil Nadu.

Additional specimen examined: **INDIA**: Tamil Nadu, Gingee, Pakkammalai RF, Oct. 2, 2013, 12°10′ N 79°18′ E, 300 m**,** Oct. 8, 2015, *N. Balachandran & S. Aravajy 26995* HIFP)

Ecology: Pakkam Malai is an isolated hillock from the range of Eastern Ghats, 350 m elevation with the domination of dry evergreen species. The topography is very undulating with outcrest of charkonite rocks and boulders. Generally the area is dry, disturbed foot hills and surrounded by rain fed cultivation.

Etymology: Honor to Dr. M. P. Ramanujam, Professor (Retd.), Department of Botany, Kanchi Mamunivar Centre for PG Studies, and at present, Chairman of State level appraisal committee, Department of Science and Technology, Puducherry for his tremendous work in biodiversity and its conservation particularly on the sacred groves along the Coromandel Coast.

Uses: The fruits are edible and children used to play it due to the sticky mucilaginous mesocarp.

Note: This plant is usually associated with *Bauhinia tomentosa*, *Cordia monoica*, *Ehretia pubescens*, *Glycosmis mauritiana*, *Hildecardia populifolia*, *Memecylon umbellatum*, in its natural habitats.

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Table 1. Distinguishing characters between ***C. dichotoma*** and ***C. ramanujamii***.

Parts	*Cordia dichotoma*	*Cordia ramanujamii*
Habit	Medium sized tree, 7–10 m	Small sized tree, 2–4 m
Bark	Ash grey, rough, thick	Greenish, smooth, thin
Leaves	Elliptic-ovate, lateral nerves 4-5 pairs; domatio in the main nerve axils, petiole 1.5–4 cm	Elliptic-oblanceolate, 3-nerved at base, lateral nerves 2-4 pairs, petiole 0.5–1.8 cm
Inflorescence	3.5–13 x 3–10 cm	5–7 x 4.5–6.5 cm
Flower	Small, 1.0 x 0.7 cm across	Large, 1.7 x 0.8 cm
Calyx	Tube 4–6 mm long, 3–5 lobed	Tube 8–10 mm long, lobes 6
Corolla	Tube 0.6 cm, lobes 5	Tube 1.2–2 cm, lobes 6–7
Stamens	Usually 5, filaments equal in length	Usually 6 or 7, filaments unequal in length
Stigma	2 times bi-clavate, lobes 4, 2–4 mm long	Equally 4- lobed, 8–10 mm long
Fruit	1 cm across	1.7 cm across
Seed	7–8 mm across	8–10 mm across

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