

Ixora gadgiliana sp. nov. (Rubiaceae: Ixorideae),
a new species from Southern Western Ghats, India

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Ixora gadgiliana sp. nov. (Rubiaceae: Ixorideae), a new species from Southern Western Ghats, India

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KEY WORDS

Rubiaceae,
Ixora,
Western Ghats,
threatened species,
Idukki,
landslides,
new species.

ABSTRACT

Ixora gadgiliana Balan & Robi, sp. nov., a new species of Rubiaceae is described from the Kerala part of Southern Western Ghats, India. It is allied to *I. lawsonii* Gamble in its terminal, dense, short-peduncled corymbose inflorescence, but distinct from the latter by the arborescent habit, short, obovate-oblongate leaves with 7-9 pairs of secondary veins, comparatively small, white flowers with short, deltoid calyx lobes and beaked anthers.

RÉSUMÉ

Ixora gadgiliana sp. nov. (Rubiaceae: Ixorideae), une espèce nouvelle des Ghats occidentaux méridionaux, Inde. *Ixora gadgiliana* Balan & Robi, sp. nov., une espèce nouvelle de Rubiaceae, est décrite des Ghats occidentaux méridionaux, Inde (États du Kerala). Elle est apparentée à *I. lawsonii* Gamble par son inflorescence en corymbe terminal, dense, à pédoncule court, mais se distingue de cette dernière par son port arborescent, ses feuilles courtes, obovales-oblongées avec 7-9 paires de nervures secondaires, ses fleurs blanches relativement petites avec des lobes de calice courts et deltoides et des anthères à bec.

MOTS CLÉS
Rubiaceae,
Ixora,
Ghats occidentaux,
espèce menacée,
Idukki,
glissements de terrain,
espèce nouvelle.

INTRODUCTION

The genus *Ixora* L., with 530-561 species, is the third largest genus of family Rubiaceae after *Psychotria* L. and *Galium* L. (Davis *et al.* 2009; POWO 2024). It is distributed chiefly in tropical and subtropical regions of the world. The genus is easily recognized by its articulate petioles, terminal, branched cymose inflorescence, narrowly-tubular, tetramerous flowers, bilobed stigma, uni-ovulate locules and seeds with a large adaxial hilar cavity (De Block 1998). In India, the genus is represented by 47 species, of which 21 species are endemic (Nayar *et al.* 2014; Kottaimuthu 2016; Murugan *et al.* 2021). About half of the Indian endemic species are confined to the Southern Western Ghats of Karnataka, Kerala and Tamil Nadu states.

While working on the floristic diversity of Idukki district, in the Kerala part of the Southern Western Ghats, the authors collected some interesting specimens of *Ixora* from the Urumbikara hills. The plant is attractive at first sight by of its short-peduncled terminal cymes and small, white flowers. Detailed taxonomic studies with the perusal of relevant literature (Hooker 1880; Gamble 1921; Husain & Paul 1989; Sasidharan 2013; Nayar *et al.* 2014; Balan & Shanmugham 2016; Kottaimuthu 2016; Gangopadhyay 2017; Murugan *et al.* 2021; Mathew & Pichan 2022) and comparison with the digital images of type specimens of *Ixora* obtained from BAM, BM, BR, CAL, E, G, K, KFRI and MH revealed that this taxon is hitherto unknown to science, and is described here as a new species as *I. gadgiliana* Balan & Robi, sp. nov.

MATERIAL AND METHODS

Plant materials were collected from the Idukki district of Kerala state and processed following the standard procedure for botanical specimens. Photographs were taken from living as well as preserved specimens. Morphological characters were studied and microscopic dissections of material were made and detailed descriptions were prepared. The plant specimens were also matched with digital images of herbarium specimens of *Ixora* deposited at major herbaria of the world.

ABBREVIATIONS

BAM	Herbarium of the Bishop Abraham Memorial College, Thuruhticad;
BM	Herbarium of the Natural History Museum;
BR	Herbarium of the Meise Botanic Garden;
CAL	Herbarium of the Botanical Survey of India;
E	Royal Botanic Garden, Living Plant Collections, Edinburgh;
G	Conservatoire et Jardin botaniques de la Ville de Genève;
K	Herbarium of the Royal Botanic Gardens, Kew;
KFRI	Herbarium of the Kerala Forest Research Institute;
MH	Herbarium of the Tamil Nadu Agricultural University Campus, Coimbatore.

TAXONOMIC TREATMENT

Family RUBIACEAE Juss.

Genus *Ixora* L.

Ixora gadgiliana Balan & Robi, sp. nov.
(Fig. 1; Table 1)

Ixora gadgiliana Balan & Robi, sp. nov. is allied to *Ixora lawsonii* Gamble in its general appearance, especially terminal, dense, short-peduncled corymbose inflorescence, but clearly distinct from the latter by the arborescent (vs shrubby) habit, obovate-oblongate (vs ovate or elliptic-oblong) leaves, up to 9 cm long (vs 10-16 cm long) lamina, and 7-9 (vs 10-16) pairs of secondary veins, up to 1 cm long, white (vs 1.5 cm long, pinkish white) flowers, 0.5 mm long, deltoid (vs 4 mm long, linear) calyx lobes and beaked (vs not beaked) anthers.

TYPE MATERIAL. — **India** • Kerala, Idukki, Urumbikara; ± 1200 m a.s.l.; 14.I.2022; *Balan Anoop P. & Robi A.J.* 327; holo-, KFRI!; iso-, BAM!, MH!

DISTRIBUTION, HABITAT AND ECOLOGY. — *Ixora gadgiliana* sp. nov. is so far known only from few populations in the Urumbikara Hills of Idukki district, Kerala, India. It is often found in isolated evergreen forest patches in between grasslands at an altitude of ± 1200 m. *Ligustrum robustum* (Roxb.) Blume subsp. *walkeri* (Decne.) P.S. Green, *Litsea vagamonia* Robi & Vajayash., *Mussaenda hirsutissima* (Hook. f.) Hutch. ex Gamble, *Neolitsea foliosa* var. *scrobiculata* (Meisn.) Chakrab., *Eurya japonica* Thunb., *Strobilanthes pulneyensis* C.B. Clarke, *Ternstroemia gymnanthera* (Wight & Arn.) Bedd., *Zanthoxylum ovalifolium* Wight, etc. are the common associates of *I. gadgiliana* sp. nov.

PHENOLOGY. — Flowering observed from December to January; Fruiting not seen even after observing for three consecutive seasons.

ETYMOLOGY. — The epithet is named in honour of Prof. Madhav Dhananjaya Gadgil, a renowned Indian ecologist, in recognition of his contributions towards the conservation of Western Ghats, one of the biodiversity hotspots in India.

CONSERVATION STATUS. — Very rare in its known distribution range and the population is restricted to two isolated locations. The type locality of the new species is located in a landslide-prone area identified by the Kerala State Disaster Management Authority (KSDMA). Hence, the new species is under threat due to natural calamities like landslides and soil erosion. It is located far away from the surveillance of forest department and therefore facing serious threat due to human encroachments. The conservation status of this species is proposed as Data Deficient. Further survey for this taxon is suggested.

ADDITIONAL SPECIMENS EXAMINED. — **India** • Kerala, Urumbikara Hills; ± 1200 m a.s.l.; 07.I. 2023; *Balan Anoop P. & Robi A.J.* 511; BAM!

DESCRIPTION

Much branched, evergreen trees, up to 5 m tall; stem often covered with mosses and ferns; branchlets slender, glabrous; internodes short (0.8-1.5 cm). Stipules interpetiolar, ovate-truncate, 2-3 × 2-2.5 mm, glabrous, awn 2-3 mm long. Leaves opposite; petioles 4-6 mm long, thick, glabrous; lamina obovate-oblongate, 6-9

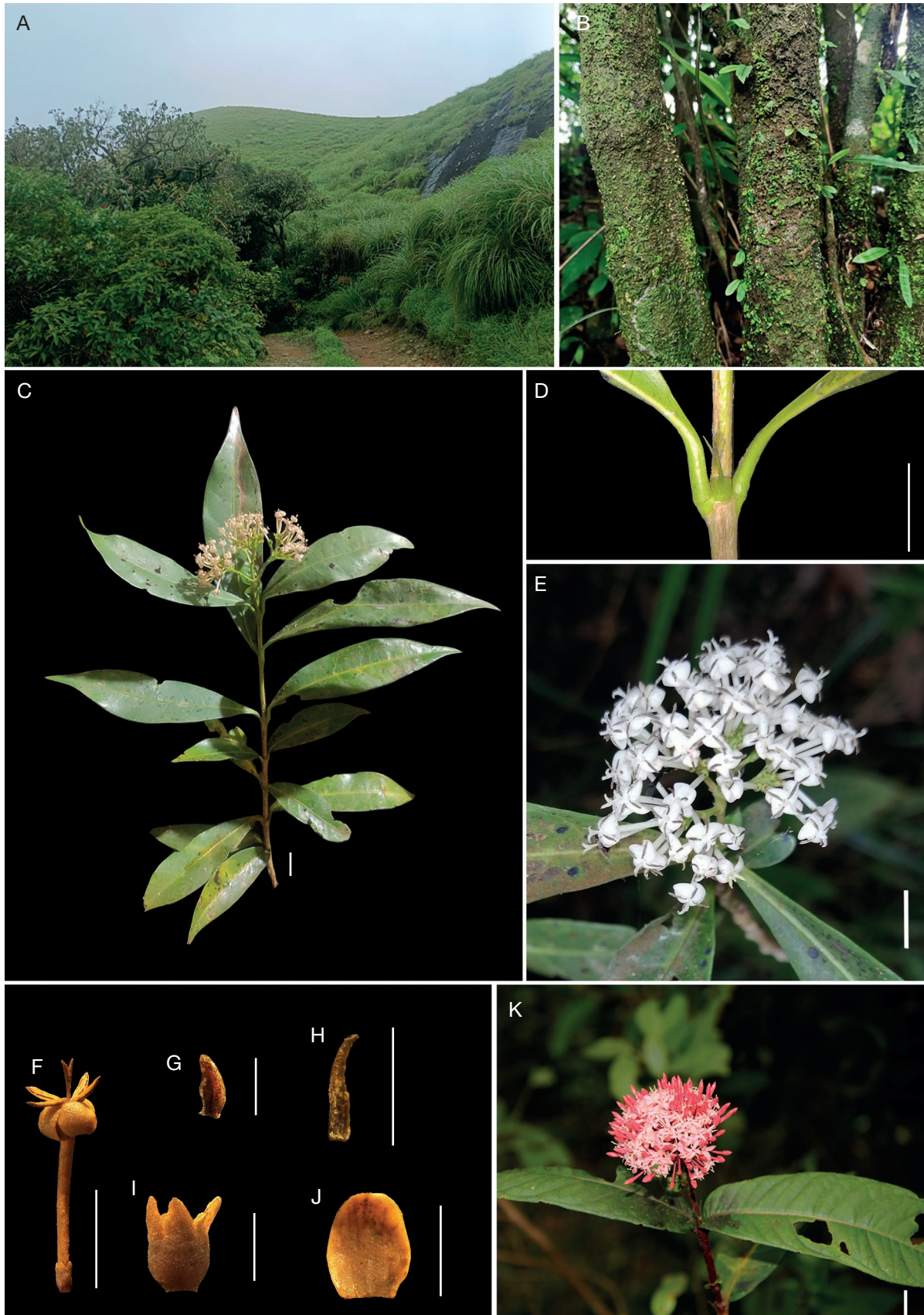


FIG. 1. — *Ixora gadgiliana* Balan & Robi, sp. nov.: **A**, habitat; **B**, stem; **C**, flowering twig; **D**, stipule; **E**, inflorescence; **F**, single flower; **G**, bract; **H**, bracteole; **I**, calyx; **J**, corolla lobe; **K**, Flowering twig of *I. lawsonii*. Scale bars: C, D, E, K, 1 cm; F, 5 mm; G, H, I, 1 mm; J, 2 mm.

TABLE 1. — Comparison of the morphological characters of *Ixora gadgiliana* Balan & Robi, sp. nov. and *Ixora lawsonii* Gamble.

Characters	<i>Ixora gadgiliana</i> Balan & Robi, sp. nov.	<i>Ixora lawsonii</i> Gamble
Habit	Trees, up to 5 m tall	Shrubs, up to 3 m tall
Leaves	Lamina obovate-oblongate, 6-9 × 1.5-2.5 cm, subcoriaceous	Lamina ovate or elliptic-oblong, 10-16 × 3-6 cm, chartaceous
Secondary veins	7-9 pairs	10-16 pairs
Flowers	White	Pink-white
Bract	1-1.2 mm long	6-10 mm long
Bracteole	0.6-0.7 mm long, lanceolate	4-5 mm long, linear
Calyx	Tube 0.8-1 mm long; lobes shorter than the tube (0.5 mm), deltoid, glabrous	Tube 1 mm long; lobes longer than the tube (4 mm), linear, ciliate
Corolla	Tube 8 mm long; lobes ovate-oblong, 2-2.2 mm long, glabrous, obtuse at apex	Tube 10-13 mm long; lobes lanceolate, 4 mm long, pubescent, acute at apex
Anther	Beaked	Not beaked
Style	10 mm long	12-15 mm long
Stigma	Lobes 1 mm long	Lobes 2 mm long

× 1.5-2.5 cm, acute-shortly acuminate at apex, cuneate at base, subcoriaceous, margins flat, glabrous on both sides; secondary veins 7-9 pairs, prominent beneath. Bracts supporting inflorescence foliaceous, 1.5-2.5 × 0.8-1.0 cm, ovate, shortly-acuminate at apex, obtuse at base, persistent. Inflorescence terminal, 4-5 cm long, 4 cm across, trichotomously branched corymbose cymes; peduncle branched at 1.5-2 cm from the base; branches 1.5-2 cm long, glabrous; bracts supporting flowers linear-lanceolate, 1-1.2 mm long, puberulous. Flowers subsessile, bracteolate; bracteoles 0.6-0.7 mm long, lanceolate, puberulous. Calyx tube 0.8-1 mm long, glabrous; lobes 4, 0.5 mm long, deltoid. Corolla white, glabrous; tube 8 mm long, slightly broadened towards apex; lobes 4, 2.2 × 2 mm, ovate-oblong, obtuse at apex, reflexed. Stamens 4, attached at mouth, alternating with corolla lobes; filaments 0.5 mm long; anthers sub-basifixed, beaked, 2 mm long, tip pointed, sagittate at base. Ovary 2-celled, ovule 1 in each cell; style slender, 1 cm long, tip fusiform, longitudinally cleft forming two stigmatic lobes of c. 1 mm long. Fruits unknown.

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