

# Species

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## *Ixora lavanya* (Rubiaceae), a new species from south Western Ghats, India

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### ABSTRACT

*Ixora lavanya* is described as a new species from Agasthyamala Hills in the Kerala part of south Western Ghats. The detailed description and images of the new taxa along with the morphological keys and photographs of the indigenous *Ixora* species of Kerala are presented.

**Keywords:** *Ixora* species; Agasthyamala Hills; morphology

### INTRODUCTION

*Ixora* Linnaeus is a large pantropical genus of Rubiaceae with more than 575 species worldwide (Mouly *et al.* 2009; POWO 2022), growing mostly in humid forests. It is a genus of shrubs and small trees with white, pink, orange or red entomophilous flowers, contorted corolla lobe aestivation, bilocular ovary, each locule with a single ovule attached peltately to the septum, and red or purple drupaceous fruits with usually two plano-convex pyrenes (Smith and Darwin, 1988; Burger & Taylor, 1993; De Block 1998; Mouly *et al.* 2009). In India, the genus is represented by 47 species (Husain & Paul, 1989), of which 22 native species, excluding ornamentals were reported from Kerala state (Sasidharan, 2013; Nayar *et al.*, 2014; Balan & Shanmugham, 2016). Among them, two names viz., *I. predeepii* Balan & S.Harikr. and *I. sivarajiana* Pradeep. were reduced as synonyms of *I. cuneifolia* Roxb and *I. notoniana* Wall. ex G.Don respectively (Murugan *et al.* 2021).

Botanical exploration in the Agasthyamala Biosphere Reserve, during 2018-2021 has yielded some interesting specimens of *Ixora*. Critical analysis of the literature (Hooker, 1880; Gamble, 1921; Husain & Paul, 1984; 1989; Pradeep, 1997; Sasidharan 2013; Nayar *et al.*, 2014; Balan & Shanmugham, 2016; Kottaimuthu, 2016; Gangopadhyay, 2017; Murugan *et al.* 2021), as well as from the scrutiny of vouchers deposited in BSI, CAL, CALI, DD, DEV, E, FRC, JCB, KFRI, MH, RHT, SKU, TBGT and online databases (<https://plants.jstor.org>; <https://www.ipni.org>; <https://www.tropicos.org>; <https://www.biodiversitylibrary.org> and <https://www.wcsp.science.kew.org>) showed that this specimen is hitherto unknown to science and warrant to be a new taxa. This has resulted in the recognition of *Ixora lavanya* sp. nov.

*Ixora lavanya* J.Mathew & P.M.Salim, sp. nov. (Fig. 1)



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**Figure 1** *Ixora lavanya* J.Mathew & P.M.Salim; A–E. Flowering twigs from type locality; F. Corolla; G–H. Close-up images of stamen and stigma; I. Stipule

## DIAGNOSIS

*Ixora lavanya* is morphologically similar to *Ixora lawsonii* Gamble in its terminal, congested, peduncled corymbose inflorescence with pink colour flowers, but differs mainly in having: lanceolate coriaceous leaves with red colour margins in apical portions (*vs.* elliptic-ovate to obovate chartaceous leaves and without any markings in apical regions in *I. lawsonii*), glabrous calyx (*vs.* ciliate calyx in *I. lawsonii*); oblanceolate glabrescent corolla lobes (lanceolate pubescent corolla lobes in *I. lawsonii*) and beaked anthers (attenuate anther without any beak in *I. lawsonii*).





**Figure 2** Diversity of indigenous *Ixora* species of Kerala; A. *I. acuminata*; B. *I. agasthyamalayana*; C. *I. brachiata*; D. *I. beddomei*; E. *I. coccinea*; F. *I. cuneifolia*; G. *I. elongata*; H. *I. finlaysoniana*; I. *I. gamblei*; J. *I. Johnsoni*; K. *I. pavetta*; L–N. *I. notoniana*

**TYPE:** India. Kerala, Thiruvananthapuram District, Peppara Wildlife Sanctuary, Way to Agasthyarkoodam, altitude 1720 m a. s. l., 14 April 2012, *J. Mathew* 2127 (holotype: MH!; isotype: KUBH! (Kerala University Herbarium)). – **PARATYPE:** Same locality, 27 April 2022, *J. Mathew* 6033–6034 (KUBH!).

Since the herbarium of the Kerala University Herbarium, Thiruvananthapuram has not been formally registered with Index Herbariorum (Thiers [continuously updated]), it is here referred to as “KUBH”.

Shrub, 1–1.5 m tall, profusely branched, glabrous; young internodes purple, older internodes grayish to brown. Stipule sheath subtruncate, 9 mm long, awn 5–6 mm long. Leaves opposite with petioles 0.5–1 mm long, leaves lanceolate, 4–6 × 1.5–2.3 cm, coriaceous, glabrous in both sides, apical portions with red colour margins in young leaves, apex narrowly acute to acuminate; base acute; secondary veins 6–7 pairs on each side. Inflorescence terminal, peduncle 2–2.5 cm long, glabrous. Flowers pink, 4-merous; flower buds ellipsoid, pedicel bracteoles 3–3.5 mm long, lanceolate, acute, glabrous; calyx lobes glabrous, linear lanceolate, lobes 2.5–3 mm long; corolla tube 11–13.5 mm long, lobes oblanceolate, glabra, acute; Stamens inserted at corolla mouth, filaments 0.5–1 mm long, glabrous; anthers beaked, style 13–13.5 mm long, glabrous; stigmatic lobes 1–1.5 mm long. Fruits unknown.



**Figure 3** Diversity of indigenous *Ixora* species of Kerala; A. *I. nigricans*; B. *I. lawsonii*; C. *I. thwaitesii*; D. *I. lanceolaria*; E. *I. polyantha*; F–G. *I. malabarica*; G. *I. undulata*; H. *I. ravikumarii*; I. *I. lavanya*



**Flowering:** April

**Distribution and Habitat:** Found in montane shola forests at altitudes of 1720 m, in Pongalappara regions of Agasthyarkoodam forests of Western Ghats, India. Common associates are *Canthium neilgherrense* and *Ochalandra travancorica*.

**Etymology:** The specific epithet '*lavanya*' (beauty and grace in Indian languages) refers the beautiful flowers of the new species.

**Conservation status:** Only a single population with 4 plants of this species is known from which the type collection was made. The conservation status of this variety is proposed as Data Deficient. Further survey for this variety is suggested, which would need to be conducted in March to April, when the plants are flowering.

#### Key to native *Ixora* species of Kerala part of south Western Ghats

1. Calyx lobes longer than the tube.....	2
1: Calyx lobes equal or smaller than the tube.....	13
2. Calyx lobes broad, oblong – lanceolate.....	3
2: Calyx lobes lanceolate or linear lanceolate.....	4
3. Inflorescence tomentose.....	<i>I. polyantha</i>
3: Inflorescence glabrous.....	<i>I. finlaysonian</i>
4. Calyx lobe lanceolate or triangular, glabrous.....	5
4: Calyx lobe linear, ciliate.....	12
5. Corymbs lax.....	6
5: Corymbs dense.....	10
6. Leaves lanceolate.....	7
6: Leaves elliptic-ovate or oblong.....	8
7. Flowers white.....	<i>I. lanceolaria</i>
7: Flowers green to yellow.....	<i>I. malabarica</i>
8. Corymbs sessile or sub-sessile.....	<i>I. acuminata</i>
8: Corymbs long-peduncled.....	9
9. Corolla light pinkish.....	<i>I. agasthyamalayana</i>
9: Corolla white.....	<i>I. gamblei</i>
10. Leaves elliptic-obovate.....	11
10: Leaves lanceolate.....	<i>I. lavanya</i>
11. Leaves coriaceous, corymbs long-peduncled.....	<i>I. notoniana</i>
11: Leaves sub-membranous, corymbs sessile.....	<i>I. Johnsoni</i>
12. Flowers white, corolla tube 17-17.5 mm long.....	<i>I. beddomei</i>
12: Flowers pink, corolla tube 8 -12 mm long.....	<i>I. lawsonii</i>
13. Calyx lobe and tube are pubescent.....	14
13: Calyx lobe and tube are glabrous.....	16
14. Peduncle 4-7 inch long.....	<i>I. elongata</i>
14: Peduncle short or absent.....	15
15. Corolla lobes glabrous.....	<i>I. cuneifolia</i>
15: Corolla lobes puberulous.....	<i>I. ravikumarii</i>
16. Leaves undulate on the margins.....	17
16: Leaves flat on the margins.....	18
17. Cymes sessile.....	<i>I. thwaitesii</i>
17: Cymes peduncled.....	<i>I. undulata</i>

18. Calyx-lobes triangular, acute.....	19
18: Calyx lobes much reduced, almost 0.....	20
19. Flowers white.....	<i>I. nigricans</i>
19: Flowers scarlet.....	<i>I. coccinea</i>
20. Leaves narrowed at base; flower buds globose.....	<i>I. brachiata</i>
20: Leaves round or cordate at base; flower buds ellipsoid.....	<i>I. pavetta</i>

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## Ethical issues

*Ixora lavanya* plants were used in this research and studied with the permission of Kerala Forest Department; Sanatana Dharma College, Alappuzha, Kerala for support; with help of Dr. K.N. Gandhi, Harvard University, USA for nomenclatural corrections.

## Conflicts of interests

The authors declare that there are no conflicts of interest.

## Data and materials availability

All data associated with this study are present in the paper.

## REFERENCES AND NOTES

- Balan AP and Shanmugham H. *Ixora pradeepii*, a new species of Rubiaceae from southern Western Ghats, India. *Bangladesh Journal of Plant Taxonomy* 2016; 23(1):65 – 69.
- Burger WC and Taylor CM. Family 202 Rubiaceae. In: Burger WC ed. *Flora costaricensis. Fieldiana: Botany*, n.s. 1993; 33:1–333.
- De Block P. The African species of *Ixora* (Rubiaceae – Pavetteae). *Opera Botanica Belgica* 1998; 9:1–218.
- Gamble JS. *The Flora of the Presidency of Madras, Vol. 2*. Adlard and Son Ltd., London 1921; 445.
- Gangopadhyay M. Notes on Rubiaceae from India. *Nelumbo* 2017; 59(1):(23–24).
- Hooker JD. *The Flora of British India, vol. 3*. Reeve and Co., London 1880; 137–149.
- Husain T and Paul SR. A new species of *Ixora* (Rubiaceae) from the Andaman & Nicobar Islands *Blumea* 1984; 30:153–156.
- Husain T and Paul SR. Taxonomic studies on Indian species of genus *Ixora* L. (Rubiaceae). *J Econ Tax Bot Additional series* 6. Scientific publishers, Jodhpur, India 1989.
- Kottaimuthu R. *Ixora ravikumarii*, a new name for *Ixora monticola* Gamble (Rubiaceae: Xoroideae). *Phytotaxa* 2016; 263(1):079–080.
- Mouly A, Razafimandimbison S, Florence J, Jérémie J and Bremer B. Paraphyly of *Ixora* and new tribal delimitation of Ixoreae (Rubiaceae): inference from combined chloroplast (*rps16*, *rbcL*, and *trnT-F*) sequence data. *Annals of Missouri Botanical Garden* 2009; 96: 146–160. doi: 10.3417/2006194
- Murugan P, Murugan C and Karthigeyan K. Notes on the identity and taxonomy of *Ixora cuneifolia* and *I. notoniana* and typification of three names of *Ixora*. *Gardens' Bulletin Singapore* 2021; 73(2):481–487.
- Nayar TS, Rasiya Beegam A and Sibi M. Flowering Plants of the Western Ghats, India. Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram, Kerala. 2014.
- POWO. Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew 2022.

14. Pradeep AK. *Ixora sivarajiana*, a new species of Rubiaceae from India. *Nordic Journal of Botany* 1997; 17:315–317. doi: 10.1111/j.1756-1051.1997.tb00319.x
15. Sasidharan N. *Flowering plants of Kerala: CD-ROM ver. 2.0*. (Kerala Forest Research Institute, Peechi, Kerala). 2013.
16. Smith AC and Darwin SP. *Ixora*. In: Smith AC, ed. *Flora Vitiensis Nova. Rubiaceae*, Vol. 4. Lawai: Pacific Tropical Botanical Garden 1988; 202–222.
17. Thiers B. continuously updated. *Index Herbariorum: A global directory of public herbaria and associated staff*. New York: Botanical Garden's Virtual Herbarium. <http://sweetgum.nybg.org/science/ih/> (accessed Jun 2018)