

***IXORA PREDEEPII*, A NEW SPECIES OF RUBIACEAE FROM SOUTHERN  
WESTERN GHATS, INDIA**

ANOOP P. BALAN<sup>1</sup> AND HARIKRISHNAN SHANMUGAM

*Indian Cardamom Research Institute, Spices Board, Myladumpara, Kailasanadu P.O.,  
Idukki, Kerala 685553, India*

*Keywords:* *Ixora*; New species; Rubiaceae; Southern Western Ghats.

**Abstract**

*Ixora predeepii*, a new species of the family Rubiaceae from Southern Western Ghats, India is described and illustrated. It is allied to *Ixora elongata* Heyne ex D. Don in general appearance, but differs from the latter by its small habit, short peduncled congested inflorescence, small purplish white flowers with glabrous corolla and scarlet berry.

**Introduction**

*Ixora* L. is the third largest genus of Rubiaceae with about 500 species (Mouly *et al.*, 2009) includes shrubs and small trees distributed in tropical and subtropical regions of the world. In India, the genus is represented by 46 species (Husain and Paul, 1989), of which 22 species are reported from Kerala state (Sasidharan, 2004, 2013; Nayar *et al.*, 2006). During a floristic exploration in the Cardamom Hills of Southern Western Ghats, India, the authors collected some interesting specimens of *Ixora*, resemble *I. elongata* in general appearance. On critical studies it turned out to be very distinct from *I. elongata* and upon perusal of herbarium specimens and literature (Hooker, 1880; Gamble, 1921; Nayar *et al.*, 2014), it was found to be an undescribed taxon which is described here as a new species, *Ixora predeepii*. A detailed description, illustration, photographs and relevant notes on ecology and phenology of the new species are provided to facilitate its easy identification in the field.

***Ixora predeepii* Anoop *et* Harikrishnan, *sp. nov.***

**(Figs 1 & 2).**

**Diagnosis:** *Ixora predeepii sp. nov.* is allied to *I. elongata* in its general appearance, many-flowered, congested inflorescence with pubescent peduncle and calyx, but clearly distinct from the latter by its small habit, comparatively small leaves, short peduncled congested inflorescence with small flowers, long calyx lobes, glabrous corolla and scarlet berry (Table 1).

*Type:* INDIA, Kerala, Idukki District, Udumbanchola, Myladumpara, 9° 5' N, 77° 9' E, at 1100 m, 10 November 2013, Anoop P. Balan 20471 (*Holotype:* MH; *Isotype:* CAL).

*Paratype:* INDIA, Kerala, Idukki District, Chathurangappara, 1100 m, 15 December 2013, Anoop P. Balan & Harikrishnan 20490 (MH).

Shrubs, 1.0–1.5 m high; branches slender, glabrous, internodes 3–5 cm long. Stipules 6–8 × 2–3 mm, triangular, long cuspidate, glabrous. Leaves 8–13 × 2.5–5.0 cm, ovate–elliptic, acute at apex, cuneate at base, chartaceous, glabrous, margin wavy; petiole 6–8 mm long, glabrous; lateral

---

<sup>1</sup>Corresponding author. Email: anooppb01@gmail.com

veins 8–12 pairs, prominent beneath. Bracts supporting inflorescence foliaceous,  $3.0\text{--}4.5 \times 2.0\text{--}2.5$  cm, ovate, acute at apex, rounded at base, persistent. Inflorescence terminal, 6–10 cm long, trichotomously branched corymbose cymes; peduncle branched at 1.0–3.5 cm from the base; branches 4–6 cm long, patently pubescent; bracts supporting flowers 2 mm long, linear, pubescent. Flowers sessile, bracteolate; bracteoles 1.5 mm long, linear, pubescent. Calyx tube 1 mm long, sparsely pubescent; lobes 4, c. 1.5 mm long, lanceolate, ciliate. Corolla deep red in bud, purplish white when open, glabrous; tube 10 mm long, broadened towards apex; lobes  $4 \times 2$  mm, ovate-oblong, obtuse to subacute at apex, reflexed. Stamens 4, attached at mouth, alternating with corolla lobes; filaments c. 1 mm long; anthers sub-basifixed, 3 mm long, tip pointed, sagittate at base. Ovary 2-celled, ovule 1 in each cell; style slender, 1.2 cm long, tip fusiform, longitudinally cleft forming two stigmatic lobes of c. 2 mm long. Berry didymous,  $6\text{--}8 \times 5\text{--}6$  mm, glabrous, crowned by the permanent calyx, scarlet when ripe. Seeds 2,  $5\text{--}6 \times 5\text{--}6$  mm, plano-convex, brown, testa membranaceous.

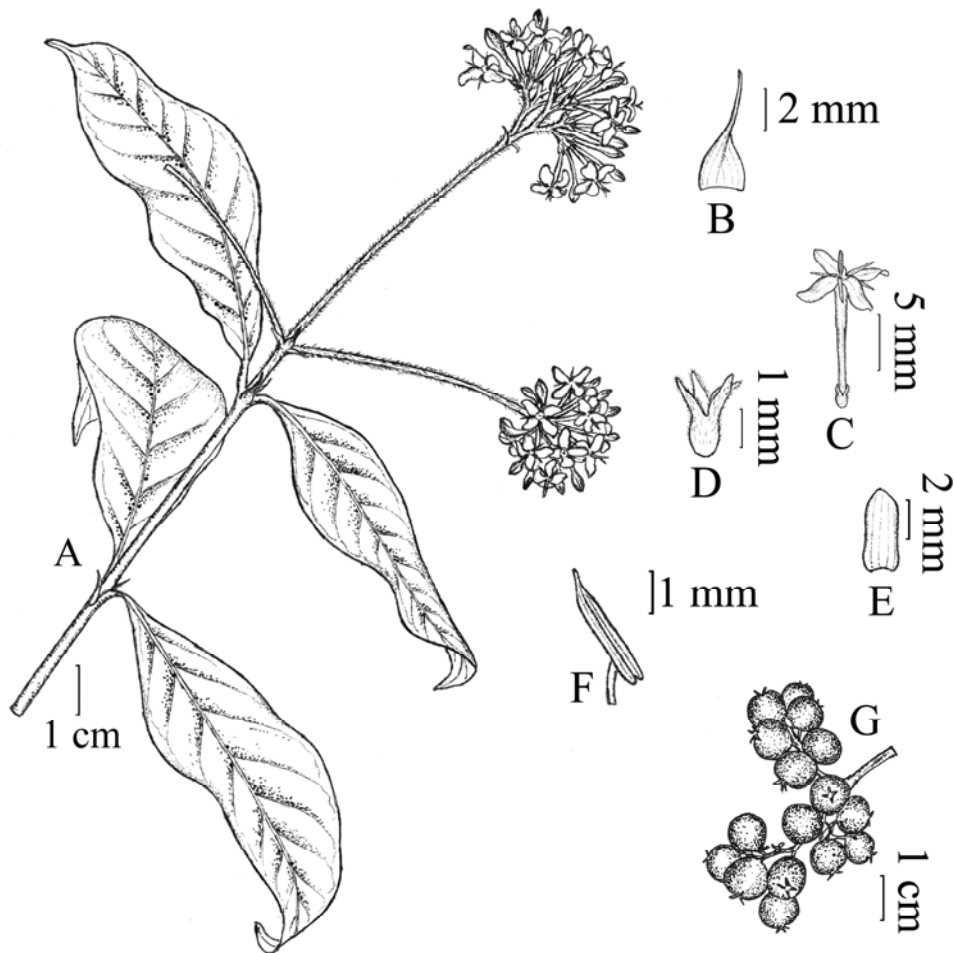


Fig. 1. *Ixora predeepii* Anoop *et* Harikrishnan, **sp. nov.** A. Habit; B. Stipule; C. Flower; D. Calyx; E. Corolla lobe; F. Stamen; G. Infructescence.

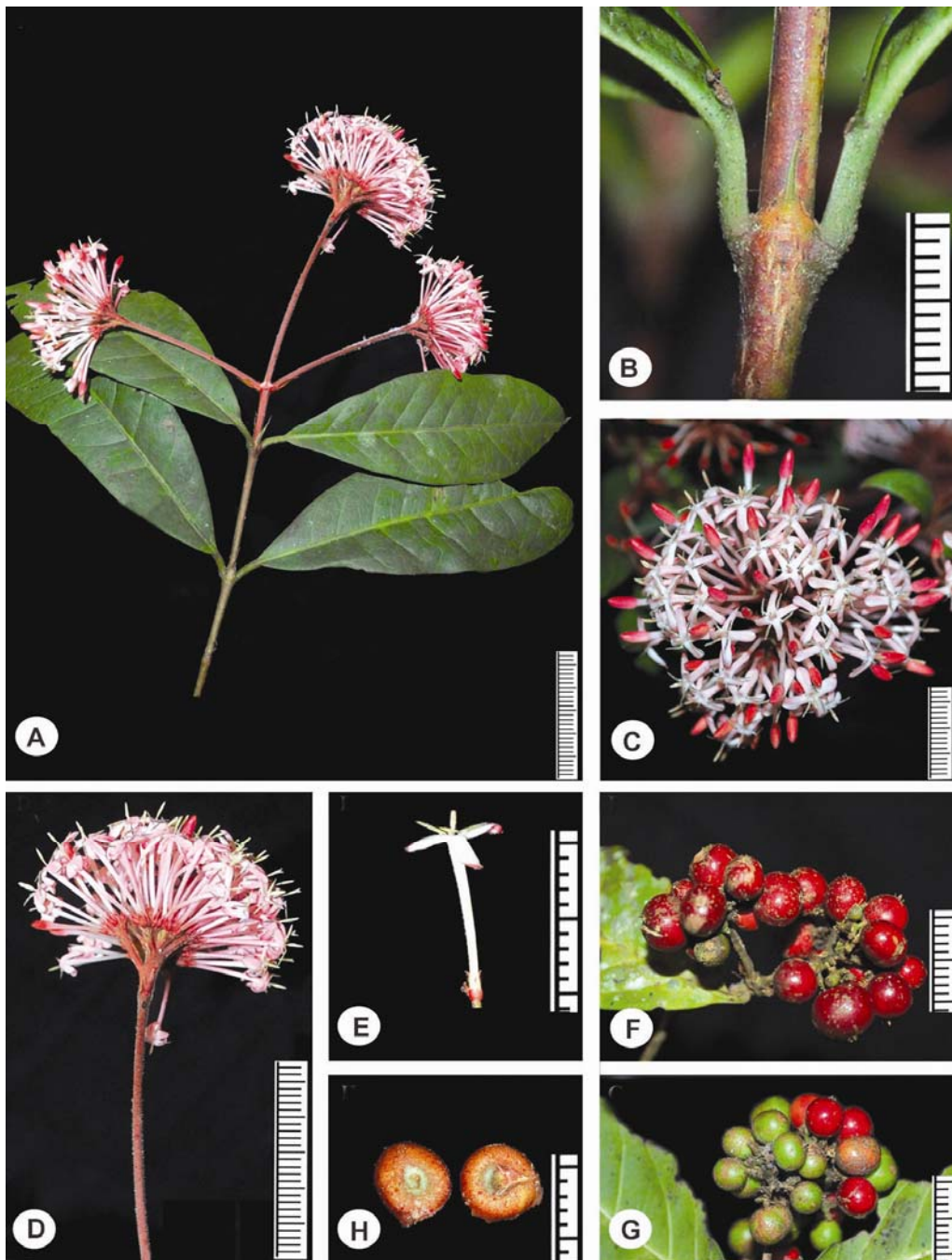


Fig. 2. *Ixora predeepii* Anoop *et* Harikrishnan, *sp. nov.* A. Habit; B. Nodal portion; C & D. Inflorescence; E. Flower; F & G. Infructescence; H. Seeds.

**Phenology:** Flowering from November to January; fruiting from February to April

**Habitat:** Cardamom plantations and the margins of evergreen forests at 1100 m elevation.

**Distribution and ecology:** *Ixora predeepii* is so far known only from the type locality, Cardamom hills of Southern Western Ghats, Kerala. It is an undergrowth shrub in Cardamom plantations and the margins of evergreen forests often found in association with *Dichapetalum gelonioides* (Roxb.) Engl., *Nothapodytes nimmoniana* (Graham) Mabb., *Ligustrum robustum* subsp. *walkeri* (Decne.) P. S. Green, *Psychotria nilgiriensis* Deb & Gangop. and *Lepisanthes erecta* (Thw.) Leenh.

**Etymology:** Specific epithet of the new taxon is in honor of Dr. S.V. Predeep, Department of Botany, SVR NSS College, Vazhoor for his valuable contributions to the field of Angiosperm taxonomy.

**Table 1. Comparison between *Ixora predeepii* sp. nov. and its related species *I. elongata*.**

| Characters     | <i>Ixora predeepii</i> sp. nov. | <i>Ixora elongata</i>      |
|----------------|---------------------------------|----------------------------|
| Habit          | Small shrubs, 1.0–1.5 m high    | Large shrubs, 3–5 m high   |
| Petiole        | 0.6–0.8 cm long                 | 1.0–1.5 cm long            |
| Lamina         | 8–13 × 2.5–5.0 cm               | 12–22 × 3.5–10 cm          |
| Lateral nerves | 8–12 pairs                      | 12–15 pairs                |
| Inflorescence  | 6–10 cm long                    | 16–25 cm long              |
| Calyx          | Lobes longer than tube          | Lobes equal to tube        |
| Corolla        | Lobes glabrous                  | Lobes with spreading hairs |
| Fruit          | Scarlet when ripe               | Black when ripe            |

**Note:** The only known locality of this novel taxon is the Cardamom hills and adjacent evergreen forest patches of Idukki district of Kerala state. The natural flora of Cardamom hills are under severe threat due to human activities related to agriculture. Except large trees, all other plants are undergoing weeding process every year which may cause severe destruction of the population of *Ixora predeepii* also. A detailed population survey is yet to be undertaken to assess the present status of this taxon in order to ascertain a proper IUCN status to ensure the conservation of this species.

### Acknowledgements

The authors are grateful to the curators of MH and CAL for allowing consultation of herbarium specimens. We are also thankful to the Director (Research) and our colleagues in Indian Cardamom Research Institute, Myladumpara for their constant support and encouragement and Dr. A.J. Robi, BAM College, Thuruthicadu, for his valuable comments on the identity of this species.

### References

- Gamble, J.S. 1921. The Flora of the Presidency of Madras, Vol. 2. Adlard and Son Ltd., London, 445 pp.  
 Hooker, J.D. 1880. The Flora of British India, vol. 3. Reeve and Co., London, pp. 137-149.  
 Husain, T. and Paul, S.R. 1989. Taxonomic studies on Indian species of genus *Ixora* L. (Rubiaceae). J. Econ. Tax. Bot. Additional series 6. Scientific publishers, Jodhpur, India.

- Mouly, A., Razafimandimbison, S.G., Khodabandch, A. and Bremer, B. 2009. Phylogeny and Classification of the species rich pantropical showy genus *Ixora* (Rubiaceae–Ixoreae) with indications of geographical monophyletic units and hybrids. *Am. J. Bot.* **96**: 686–706.
- Nayar, T.S., Beegum, A.R., Mohanan, N. and Rajkumar, G. 2006. Flowering Plants of Kerala - A handbook. JNTBGRI, Thiruvananthapuram, pp. 282–287.
- Nayar, T.S., Beegum, A.R. and Sibi, M. 2014. Flowering Plants of the western Ghats, India, Vol. **1**. JNTBGRI, Thiruvananthapuram, 386 pp.
- Sasidharan, N. 2004. Biodiversity documentation for Kerala. Part 6: Flowering Plants. Kerala Forest Research Institute, Peechi, Kerala, pp.232.
- Sasidharan, N. 2013. A digital database of Flowering Plants of Kerala: CD-ROM ver. 2. Kerala Forest Research Institute, Peechi, Kerala.

*(Manuscript received on 23 January 2016; revised on 2 May 2016)*