



NOTE

Ixora longibracteata Bremek. (Rubiaceae), An Addition to Flora of India, with Notes on its Status and Distribution

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ABSTRACT: *Ixora longibracteata* has been rediscovered after its type collection from Jaldapara National Park, West Bengal, India, earlier known only from its type locality, Chittagong hill tracts in Bangladesh. This species is also reported here as an addition to the flora of India. Besides, hitherto undescribed morphology of fruit of this species is provided here in the description for the first time with photograph. A detailed description, illustration, photograph, distribution map and conservation status of the species are provided here to facilitate its easy identification.

KEY WORDS: Bremekamp, *Ixora*, New Record, Rediscovery, Rubiaceae.

INTRODUCTION

Ixora L., the third largest genus of the family Rubiaceae, is distributed in tropical and subtropical regions of the world, and represented by ca. 500 species (Mouly *et al.*, 2009). Though the genus is pantropical in distribution, its greatest species density is found in the Malaysian Archipelago with its maximum in Borneo (Bremekamp, 1937a). *Ixora* is characterised by its terminal inflorescence with tetramerous flowers. It differs from its very closely allied genus *Pavetta*, by the exerted part of the style being as long as the corolla lobes, sometimes even much shorter, and the two stigmatic lobes separate (divaricate) entirely.

Linnaeus (1753) established the genus, *Ixora* with two species, namely *Ixora coccinea* and *Ixora alba*. Hooker (1880) recorded 37 species and 5 varieties, besides 4 imperfectly known, doubtful, and rejected species from the then flora of British India. Bremekamp (1937a, b and 1938) and Corner (1941) made a comprehensive study on the species of *Ixora*, confined to Indo-Burmese and Malesian regions, respectively. Bremekamp (1959) described five new species, namely *Ixora longibracteata* and *Ixora tigriomustax*, from Chittagong hill tracts, *Ixora athroantha*, from Sukna, West Bengal, *Ixora rangonensis*, from Myanmar and *Ixora tenuifolia*, from Great Nicobar.

According to Santapau and Henry (1973) there are ca. 30 species of *Ixora* in India. Husain and Paul (1989), who have made a comprehensive taxonomic study on the Indian species of *Ixora*, reported 42 species, 5 varieties and 6 forms under 2 subgenera and 6 sections from the present political boundary of the country.

Apart, during the early and late 1990s a few novelties, viz. *Ixora agasthyamalayana* Sivad. & N. Mohanan (Sivadasan and Mohanan, 1991) and *Ixora sivarajiana* Pradeep (Pradeep, 1997) were described from Western Ghats of Kerala in southern India, and *Ixora kachinensis* from northeastern India and *Ixora pseudoacuminata* from Myanmar were described by Deb and Rout (1992). Recently, *I. rangonensis* Bremek., a species earlier considered as an endemic to Rangoon district of Myanmar was also reported as an addition to India from Kalain Range of Borail Wildlife Sanctuary in the Cachar district of Assam by Barbhuiya (2012).

The Jaldapara National Park (25°58'–27°45' N and 89°08'–89°55' E) is situated on the banks of Torsa River in Jalpaiguri district of West Bengal state, covering an area of 216.5 km². It was established in 1941 as Jaldapara Wildlife Sanctuary, to conserve the Great Indian One-horned Rhinoceros, which was later declared as a National Park in May 2012 (Ghosh *et al.*, 2013). Banerjee (1993), who explored the plant resources of Jaldapara National Park, recorded only two species of *Ixora*, namely *Ixora arborea* Roxb. ex Sm. (= *Ixora pavetta* Andr.) and *Ixora undulata* Roxb. During the recent floristic inventories in the Jaldapara National Park, an interesting species of *Ixora* was collected from the inland forests of Baniya, Kodalbasthi and Nalrajabadi areas. On critical scrutiny of collected specimens with literature (Bremekamp, 1959; Husain and Paul, 1989; Wood, 1999), and comparison with the type specimens at BSD and herbarium specimens of other *Ixora* species housed at CAL, it was identified as *I. longibracteata* Bremek., a species hitherto not reported from India.



Bremekamp (1959) described *I. longibracteata* based on a single flowering specimen (*J.N. Dent 14*) collected from Tintilla, Chittagong hill tracts in Bangladesh by J.N. Dent in 1939. In fact, the specimen was identified by Dent as *Ixora goalparensis* Bremek. Raizada (1941) also included this species in his article, "On the flora of Chittagong" based on the same collection. Since then there is neither a report of its occurrence from anywhere, including the Chittagong hill tracts nor a representative specimen available at any of the herbaria in Bangladesh, including the Bangladesh National Herbarium at Dhaka. Hitherto, this species is known to occur only from Chittagong hill tracts in Bangladesh based on a single collection of Dent. Therefore, the present collection is a rediscovery from other than its type locality about 75 years after its type collection from Chittagong hill tracts in Bangladesh. Detailed description, illustration, photographs and distribution map with status are provided here to facilitate its easy identification. Furthermore, the morphological features of the fruits are described in this paper for the first time.

TAXONOMIC TREATMENT

Ixora longibracteata Bremek., Indian Forester 85: 371. 1959; T. Husain & S.R. Paul, J. Econ. Taxon. Bot., Addit. Ser. 6: 119, f. 17. 1989. Figs. 1–3

Type: **BANGLADESH**, Tintilla, Chittagong hill tracts, 16 May 1939, *J.N. Dent 14* (BSD, image!).

Shrub, to 2 m high. Stems somewhat terete or to subangular, green or sometime maroon-tinged when young, cylindric and grey when mature; old twig somewhat longitudinally wrinkled; nodes swollen; internodes 2–7 cm long, distance reduces towards apex. Leaves simple, opposite-decussate, obovate, oblanceolate or oblanceolate-elliptic, cuneate at base, or lamina base narrowly forming a canal on petiole, entire and faintly thickened at margins, sometimes faintly wavy, especially towards apex, gradually tapering (when breadth is 1–3.5 cm) into a short-acuminate apex (abruptly acuminate when leaves obovate or broadly oblanceolate and breadth is 4–5.5 cm), 4.5–13.5 × 2–5.5 cm, glabrous, dark green above, pale beneath; lateral veins 6–12 pairs, anastomosing near margins, a pair of faint veins one on either side of midrib gives an appearance of 3-veined base and forming an arch/margin and appear as an intramarginal vein; midrib raised on both surfaces, strongly so beneath, somewhat closely minute white granular gland-dotted beneath; petioles 4–11 mm long, canaliculated above, smooth, green, maroon-red/brown-red when young, rough, dark with annular scars below, canal closed when mature; stipules interpetiolar with broad triangular, concave base (2–2.5 × 1–2 mm) with grey

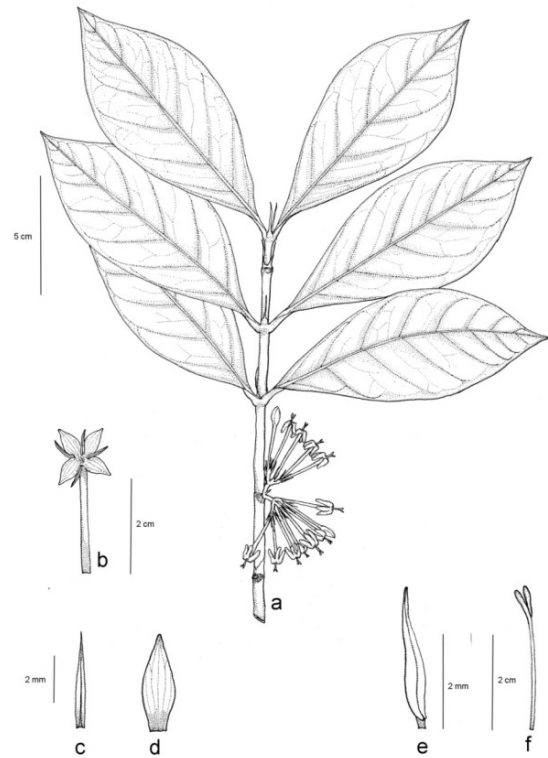


Fig. 1. *Ixora longibracteata* Bremek. A: Habit. B: Flower. C: Calyx lobe. D: Corolla lobe. E: Anther. F: Style.

Figs. 1–3

soft hair and 5 or 6 thick hair (as long as the basal portion) closely adhering the surface and glandular inside, and a prolonged flexible cusp, green or slightly maroon-tinged; cusp 10–12 mm long. Inflorescence a kind of subcapitate cymes, axillary or terminal, ca. 4 × 5.5 cm, up to 6-branched; each branch further trichotomously branched into 3-flowered ultimate floral branches; peduncle of each primary branch 2–4.5 mm long, sparsely grey-puberulous; bracts with 2 linear arms with broad base, 2–2.5(–3) mm long with few long white hairs. Flower buds 1.2–1.7 cm long; corolla tube 1–1.5 cm long, 4-lobed; corolla lobe unopened portion linear-ovate-elliptic or linear-ovate-lanceolate, 3–3.5 × ca. 1 mm, white. Calyx tube ca. 1 mm long, glabrous, 5-lobed; lobes linear, 8–10 mm long, pink-tinged. Corolla salver-shaped, 1.8–2 × ca. 0.5 cm, glabrous, white; tube very faintly widening near lobes, 5-lobed; lobes oblong-ovate, thin at margins, acute to short-acuminate at apex, 4–5 × 1.5–1.75 mm, 8-veined. Stamens 4, alternating corolla lobes, 3.5–3.75 mm long; filaments adnate to junction of corolla tube and lobes, ca. 1.75 mm long; anthers oblong-lanceolate, shortly apiculate, ca. 2.5 mm long, pale yellow, dehiscing longitudinally on lateral sides; connective distinct; pollen 3-zonocolporate, subprolate, ca. 18 × 16 μm; tectum reticulate. Ovary inferior; style and stigma ca. 16 mm long; stigmatic lobes 2, slightly recurved



Fig. 2. *Ixora longibracteata* Bremek. **A:** Flowering-twig. **B:** Close-up of stipule. **C:** Inflorescence. **D:** Ripe fruits. **E:** Seed. **F:** SEM photograph of pollen.

apically, ca. 2 mm long, dark-coloured. Drupes subglobose or ellipsoid, 10–11 mm across, circular scar at apex with erupted centre and remnants of calyx lobes; pericarp ca. 2 mm thick, succulent, glabrous, shiny, pale green when young, turning red when ripe; seed 1, ovoid, with a scar of point of attachment, $8.5\text{--}9 \times \text{ca. } 7$ mm, smooth, grey-brown.

Flowering and Fruiting: May–December.

Habitat and Ecology: Dense inland evergreen forests, at elevations between 80 and 100 m, growing with *Chloranthus elatior* Link and *Psychotria calocarpa* Kurz.

Distribution: Bangladesh (Chittagong hill tracts) and India (Jaldapara National Park in West Bengal).

Specimens examined: **INDIA**, West Bengal: Jalpaiguri district, Jaldapara National Park, Kodalbasthi Range, 5 June 2013, *K. Karthigeyan* 59347 [flowering specimen] (CAL); inland evergreen forest, Nalrajabadi, Chilapatha Range, 30 November 2013, *K. Karthigeyan* 61320 [fruiting specimen] (CAL); Baniya, Chilapatha Range, 11 May 2014, *K. Karthigeyan* 61491 [flowering specimen] (CAL).

Conservation Status: Walter and Gillett (1998) and

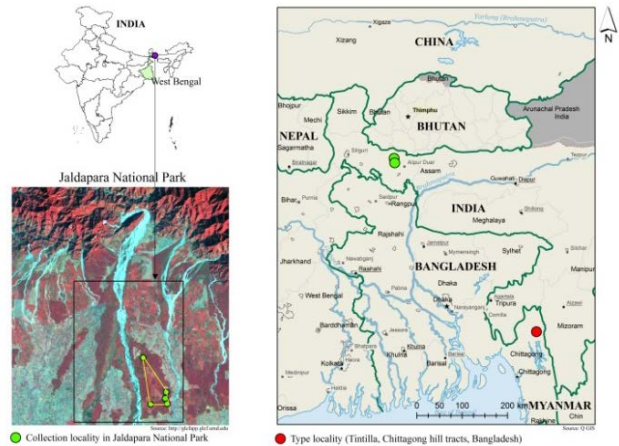


Fig. 3. Distribution map of *Ixora longibracteata* Bremek. in India and Bangladesh.

Rao *et al.* (2003) categorised it as an indeterminate species as the information on this species is inadequate. During the present study only five populations were located in the inland forests of Baniya (27 individuals), Kodalbasthi (4 individuals) and Nalrajabadi (10 individuals) areas in Jaldapara National Park. Following the IUCN Red List Categories and Criteria Version 3.1 (IUCN, 2012), this species has been assessed here as Critically Endangered [CR B1+2a, c (ii, iii, iv)] owing to its highly restricted geographical distribution (EOO: 16.9 km^2 ; AOO: $< 10 \text{ km}^2$), fluctuations in geographic range of occurrence and number of locations and mature individuals in each population.

Note: Bremekamp (1959) described *I. longibracteata* without fruits, and stated, ‘*drupa nondum visa*’ (fruits not yet seen). However, during the present study, fruiting specimens were also collected, and the description of fruits and seeds based on the recent collections are provided here for the first time with photographs. The species closely resembles *I. goalparensis* and *I. subsessilis* Wall. ex G. Don, however, it can easily be distinguished from them by number of flowers in an inflorescence, and size (especially in length) of bracteoles, calyx lobes, corolla tube and stamens.

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