

Four new additions of angiospermic liana for the state flora of Tripura, India

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[Received 22.04.2014; Revised & accepted 17.05.2014; Published 30.06.2014]

Abstract

Four species of lianas angiosperms viz. *Amphineurion marginatum* (Roxburgh) D.J. Middleton [Apocynaceae], *Bidaria inodora* (Loureiro) Decaisne [Apocynaceae], *Combretum acuminatum* Roxburgh [Combretaceae] and *Derris ferruginea* (Roxburgh) Benthham [Fabaceae] are reported here for the first time as new records for the state flora of Tripura, India.

Key words: Lianas, New records, Tripura.

INTRODUCTION

The lianas are woody climbers having curious growth forms and interesting climbing mechanisms. They access the forest canopy by supporting other host species to get maximum sunlight for their metabolism. They play a very vital role in constituting plant communities in the tropical evergreen forests.

While working on lianas plants in Tripura, the authors came across some interesting species collected from Dhalai and North Tripura districts of the State. After critical examination and consultation of specimens in ASSAM and CAL, these plants were identified as *Amphineurion marginatum* (Roxburgh) D.J. Middleton [Apocynaceae], *Bidaria inodora* (Loureiro) Decaisne [Apocynaceae], *Combretum acuminatum* Roxburgh [Combretaceae] and *Derris ferruginea* (Roxburgh) Benthham [Fabaceae]. Subsequent scrutiny of relevant literature (Hooker 1875 – 1897; Deb 1981, 1983; Thothathri 1982; Sanjappa 1992; Gangopadhyay & Chakrabarty 1997; Jagtap & Singh 1999) revealed that these four species were hitherto not known from Tripura; hence, recorded here as new additions for the flora of this state. The present paper provides brief morphological description, phenology, specimens examined and distribution of each taxon. Some photographs are also provided to facilitate the easy recognition of these plants.

Taxonomic treatments:

Amphineurion marginatum (Roxburgh) D.J. Middleton in Taxon 55(2): 502. 2006. *Echites marginatus* Roxburgh, Fl. Indica 2: 15. 1832 (as *E. marginata*). *Aganosma marginata* (Roxburgh) G. Don, Gen. Hist. 4: 77. 1837; C.E. Parkinson, Forest Fl. Andaman Isl. 207. 1923; Kanjilal *et al.*, Fl. Assam 3: 267. 1939; D.J. Middleton in Kew Bull. 51: 469. 1996. [Apocynaceae; PLATE - 1A]

Type: Bangladesh, Silhet, 1829, Wallich 1661a (G, digitized image!).

Liana, c. 8 m tall; stem woody with a basal diameter of c. 20 cm; stem and branchlets lenticellate. Leaves simple, opposite; lamina oblong-lanceolate, 4 – 10 x 2 – 3 cm, slightly repand, acuminate base, glabrous on adaxially and pubescent on abaxial surface with prominent midrib and lateral veins; lateral veins 8 – 12 pairs; petiole 5 – 7 mm. Cymes axillary, lax, 3-branched; peduncle pubescent; bracts and bracteoles sub-linear; pedicel pubescent; calyx with 5 triangular teeth, 5 – 7 mm long, pubescent on abaxial surface; corolla lobes 5, narrowly elliptic, 1 – 2 cm x 1.5 – 2 mm, acute, yellowish; stamens 5, included in corolla tube; filaments 5 – 7 mm long, glabrous; anthers subulate, 2 – 3 mm long; ovary glabrous; style 3 – 5 mm long, glabrous; stigma capitate. Follicles 2, cylindrical, 15 – 20 long, c. 1 cm in diameter; seeds blackish, compressed, oblong, one end acute, hooked; coma c. 2 cm long.

Flowering & Fruiting: April – December.

Specimens Examined: Tripura, Dhalai district, Shrirampur (24° 07' N & 91° 46' E), *L. Darlong 10443*, dated 22nd April 2013.

Distribution: India (Andaman Islands, Assam, Eastern Himalaya and now in Tripura), Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam.

Bidaria inodora (Loureiro) Decaisne in A.P. de Candolle & A. de Candolle, Prodr. 8: 624. 1844; Bhattacharyya & Darlong in J. Bot. Res. Inst. Texas 7(2): 743 – 744. 2013. *Cynanchum inodorum* Loureiro, Fl. Coch. 166. 1790. *Gymnema inodorum* (Loureiro) Decaisne in A.P. de Candolle & A. de Candolle, Prodr. 8: 551. 1844; B. Li *et al.* in Fl. China 16: 240, fig. 234. 1995. *Asclepias tingens* Roxburgh (Hort. Beng. 21. 1814, *nom. nud.*) Pl. Coromandel 3(2): 34, t. 239. 1815. *Gymnema tingens* (Roxburgh) Sprengel, Syst. Veg. (ed. 16) 1: 844. 1824 (1825); Wight & Arnott in R. Wight, Contr. Bot. India 45. 1834; Hooker *f.*, Fl. Brit. India 4: 31. 1883. *Bidaria tingens* (Roxburgh) Decaisne in A.P. de Candolle & A. de Candolle, Prodr. 8: 623. 1844; A.P. Jagtap & N.P. Singh, Fas. Fl. India 24: 69. 1999. [**Apocynaceae**; **PLATE: 1B & C**]

Type: India, 1843, *W. Griffith s. n.* (P, digitized image!).

Liana, c. 8 m tall, twining sinistrose; stem woody, basal diameter to 15 cm; internodes 6 – 12 cm long, pubescent when young, glabrous on maturity; latex milky-white. Leaves simple, opposite; lamina ovate, 9 – 13 x 5 – 7.5 cm, incised of c. 2 mm, caudate, base subcordate, lateral veins prominent, 5 – 6 pairs, pubescent along the midvein and lateral veins when young; petiole 2 – 3 cm. Cymes extra-axillary, corymbose, many-flowered; peduncle c. 2 cm long, pubescent; bracts lanceolate, 1.5 – 3 x c. 0.9 mm, acute, pubescent. Flowers actinomorphic, gamopetalous, bisexual, 5-merous; pedicels c. 2 cm long, terete, slender, pubescent; calyx, divided up to base, lobes 5, ovate, c. 4 x 2 mm, obtuse, margin ciliate, pubescent on adaxial surface; corolla creamy white, campanulate, lobes 5, obliquely ovate, c. 5 – 6 x 2 – 3 mm, pubescent on adaxial surface; corona uniseriate, 5-ridged, included, adnate, c. 1.6 x 0.9 mm; stamens 5, c. 3.7 mm long; pollinia 5; pollen masses solitary, pendulous, yellow, waxy, 0.5 – 0.6 x 0.18 – 0.20 mm, attached by c. 0.07 mm long light-brown caudicle; corpuscle c. 0.25 mm long; gynostegium c. 4.5 mm long, terete; stigma dome-shaped, exerted; ovary glabrous. Follicles single, lanceolate, 11 – 13 x 1.9 – 2.2 cm, smooth, glabrous with pointed tips, green, pericarp woody; seeds c. 1.5 x 1 cm, yellowish; coma c. 5.5 cm, white.

Flowering & Fruiting: June – October.

Specimens Examined: Tripura, Dhalai district, Manikpur (23° 56' N & 91° 51' E), *L. Darlong 10341*, dated 7th June 2012; North district, Dasda Kanchanpur (24° 20' N & 92° 01' E), *L. Darlong 10353*, dated 13th June 2012; Dhalai district, Manikpur (23° 56' N & 91° 51' E), *L. Darlong 10380*, dated 26th October 2012.



PLATE – I: Fig. A. *Amphineurion marginatum*: Flowering twig; Figs. B & C. *Bidaria inodora*: B. Flowering twig; C. Fruit; Fig. D. *Combretum acuminatum*: Fruiting twig; Figs. E & F. *Derris ferruginea*: E. Flowering twig; F. Fruiting twig.

Distribution: India (Assam, Tropical Himalayas, Southern India and now in Tripura), China and Philippines.

Combretum acuminatum Roxburgh [Hort. Bengal.: 28. 1814, *nom. nud.*], Fl. Indica 2: 228. 1832; C.B. Clarke in Hooker *f.*, Fl. Brit. India 2: 455. 1878; Prain, Bengal Pl. 1: 483. 1903; Brandis, Ind. Trees 312. 1906; Ridley, Fl. Malay Penins. 1: 708. 1922; Kanjilal *et al.*, Fl. Assam 2: 252. 1938; N.P. Balakrishnan, Fl. Jowai 1: 196. 1981; M. Gangopadhyay & T. Chakrabarty in J. Econ. Taxon. Bot. 21: 299. [**Combretaceae; PLATE – 1D**]

Type: Bangladesh, HBC (a native of Sylhet), *Roxburgh* Icon. No. 2225 (CAL!).

Liana, twining sinistrose, climbing to 10 m high; stem woody, terete, basal diameter to 30 cm; young shoots and branchlets ferruginous tomentose. Leaves simple, opposite; lamina oblong-lanceolate, 13 – 17 x 6 – 7 cm, entire, acuminate, base obtuse, glabrous above, minutely lepidote beneath, with prominent midrib and lateral veins; midrib densely lepidote and minutely pubescent; lateral veins 8 – 11 pairs; petiole c. 5 mm, hairy. Panicles axillary and terminal, 3 – 12 cm long, leafy, ferruginous tomentose and minutely lepidote; bracteoles minute, linear, 3 – 5 mm long, caduceous; spikes 2 – 8 cm long. Flowers sessile, 6 – 7 mm across, 4-merous; calyx 4-lobed, campanulate, 2.5 – 3 x 1.5 – 2 mm; tube 1.5 – 3 mm; lobes triangular to deltoid, 0.7 – 1 x 0.5 – 0.8 mm, acute, dotted with minute circular scales, puberulous; disk at the base of limbs glabrous; corolla yellowish, lobes 4, narrowly oblanceolate, 0.8 – 2 x 0.4 – 1 mm, acute; stamens 8, 4 – 7 mm; anthers ellipsoid, 0.7 – 1.5 mm; ovary ellipsoidal, minutely pubescent, lepidote; style 4 – 6 mm. Fruits ellipsoid, 3 – 5 x 1 – 1.4 cm, both ends tapering, often twisted with 4 longitudinal ridges, lepidote, minutely pubescent when young, glabrous and brown when mature.

Flowering & Fruiting: February – July.

Specimens Examined: Tripura, North Tripura district, Phuldungsai, near Betling Chip (23°57' N & 92°16' E), c. 930 m, *L. Darlong 10375*, dated 16th July 2012.

Distribution: India (Arunachal Pradesh, Assam, Meghalaya, Tamil Nadu, West Bengal and now in Tripura), Bangladesh, Sri Lanka, Bhutan, Myanmar, Thailand, Australia, Cambodia, Indonesia, Laos, Malaysia, New Guinea, Philippines, and Vietnam.

Derris ferruginea (Roxburgh) Benth in Miquel, Pl. Jungh. 252. 1853 & J. Linn. Soc. 4 (Suppl.): 109. 1860; Baker in Hooker *f.*, Fl. Brit. India 2: 245. 1878; Kanjilal *et al.*, Fl. Assam 2: 114. 1938. *Robinia ferruginea* Roxburgh, Fl. Indica 3: 329. 1832. [**Fabaceae; PLATE – 1E & F**]

Type: Bangladesh, Silhet, *Wallich 5885a* (K, digitized image!).

Liana, climbing upto ± 8 m high; stem woody, with a basal diameter of to 25 cm; branchlets densely rusty pubescent. Leaflets 7 – 9; lamina obovate – oblong, 6 – 13 x 2 – 5 cm, entire, obtusely acuminate, cuneate at base, leathery, faintly rusty puberulous abaxially, glabrous and shiny adaxially. Panicles axillary and terminal, 15 – 30 cm long, densely rusty puberulous; rachis nodes with 2 or 3(–8) fascicled flowers often borne on short branchlets. Flowers 1 – 1.5 cm long; pedicels slender, 4 – 6 mm, pubescent; calyx 3 – 5 mm long, teeth 5, minute, pale red; corolla white; vexillum ovate, claw 7 – 9 mm long, pubescent on abaxial surface; limb 3 – 4 mm long; stamens 10, monadelphous; ovary compressed, 4 – 6 mm long, pubescent; stipe c. 1 mm long; style 5 – 7 mm long, glabrous. Pods oblong, flat, 5 – 8 x 2.5 – 3 cm, reticulately veined, leathery, densely rust-colored sericeous when young; abaxial suture with a 1 – 2 mm wide wing; adaxial suture with a 3 – 5 mm wide wing; 1 – 2(–3)-seeded.

Flowering and Fruiting: March – August.

Specimens Examined: Tripura, Dhalai district, Nalkata, (23°57'N & 92°16'E), c. 930 m, L. Darlong 10474, dated 24th April 2013.

Distribution: India (Assam, Manipur, Meghalaya, Sikkim, West Bengal and now in Tripura), Bangladesh, Laos, Myanmar, Thailand and Vietnam.

Acknowledgements

The authors are thankful to the Head, Department of Life Science and Bioinformatics, Assam University, Silchar for providing necessary facilities. They also thank the Herbarium in-charge, Botanical Survey of India (ASSAM and CAL) for providing permission to consult their herbaria and library. They offer sincere thanks to Dr. Kanchi N. Gandhi (GH) for his kind help and Dr. Mahua Pal (CAL) for providing a literature. First author thanks the University Grants Commission, New Delhi for financial support under RGNF scheme.

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