Additions to the Flora of Manipur inNorth East of India

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Abstract

Botanical survey conducted to explore the medicinal plants' wealth of Manipur, North Eastern State of India, has resulted in adding fourteen taxa to the State flora, viz. Acmella ciliata (Kunth) Cassini, A. uliginosa (Swarz) Cassini, Aspidopteris floribunda Hutchinson, Blumea clarkei J.D. Hooker, Boehmeria rugulosa Weddell, Chamaecrista auricoma (Graham ex Bentham) Singh, C. wallichiana (de Candolle) Singh, Clerodendrum farinosum (Roxburgh) Wallich, Ficus heteropleura Blume, Indigofera arrecta Hochstetter ex A. Richard, I. astragalina de Candolle, Lespedeza floribunda Bunge, Solanum barbisetum Nees and Spermacoce verticillata Linnaeus.

Key words: Addition, Flora, Manipur, North Eastern State, India.

INTRODUCTION

Botanical visitswere conducted to Manipur in two occasions, once during August – September, 2007 and the other during November, 2011 to explore the medicinal plants wealth in Imphal East, Imphal West, Churachandpur, Chandal and Thonpaul Districts of Manipur for strengthening the medicinal plants repository of FRLH herbarium, Foundation for Revitalization of Local Health and Traditions (FRLHT), located in Bangalore, India, as one of the Centre of Excellence (COE) on medicinal plants supported by the Ministry of Forest and Environment (MOEF).

The voucher specimens of all the collections were critically identified by referring the relevant literature of the country, namely "The Flora of British India" (Hooker 1872-1897); the North Eastern State Floras such as Arunachal Pradesh (Chauhan et al. 1996; Chowdhery et al. 2008), Assam (Kanjilal et al. 1934 – 1940), Meghalaya (Haridasan & Rao 1987; Balakrishnan 1983), Mizoram (Singh et al. 2002) and Tripura (Deb 1981, 1983). Interestingly, the following fourteen species viz. Acmella ciliata (Kunth) Cassini, A. uliginosa (Swarz) Cassini and Blumea clarkei J.D. Hooker of Asteraceae; Aspidopteris floribunda Hutchinson of Malphigiaceae, Boehmeria rugulosa Weddell of Urticaceae; Chamaecrista auricoma (Graham ex Bentham) Singh and C. wallichiana (de Candolle) Singh of Fabaceae; Clerodendrum farinosum (Roxburgh) Wallich of Lamiaceae; Ficus heteropleura Blume of Moraceae; Indigofera arrecta Hochstetter ex A. Richard, I. astragalina de Candolle and Lespedeza floribunda Bunge of Fabaceae; Solanum barbisetum Nees of Solanaceae and Spermacoce verticillata Linnaeus of Rubiaceae have not found in the published literature on the flora for the State of Manipur (Deb 1961; Singh et al 2000). The screening of data also includes the recent extensive works on Orchids (Sathishkumar & Sureshkumar 2005; Chowlu et al. 2012; Kishor et al. 2012; Chowlu et al. 2013). Hence, these additions are presented here with detailed description, phenology and geographical distribution for easy understanding of the species. Those are arranged alphabetically to the generic names. All the processed voucher herbarium sheets are deposited at FRLH.

ENUMERATION

Acmella ciliata (Kunth) Cassini in F. Cuvier, Dict. Sci. Nat. 24: 331. 1822. *Spilanthes ciliate* Kunth in Nov. Gen. *et* Sp. Pl. 208. 1820; Chowdhery in Hajra *et al.*, Fl. India 12: 409. 1995. [Asteraceae]

Herbs, perennial, up to 75 cm. Stems terete, usually decumbent to ascending, rooting at lower nodes. Lamina ovate to broadly ovate, $3-6\times2-4$ cm, distantly serrate – coarsely dentate, acute, base usually truncate, usually glabrous except along the mid vein. Capitula radiate, solitary, rarely 2, terminal, becomes axillary; $ca \ 8 \ x \ 6 \ mm$; peduncles up to 4 cm. Phyllaries 2-seriate, outer ovate or elliptic, inner series lanceolate; paleae straw-colored; ray florets 10, yellow; disk florets many, yellow; corollas 5-lobed; achenes black, margin sparsely to moderately ciliate; pappus usually absent or sometimes with 2 very short sub equal bristles.

Flowers & Fruits: July – December

Specimen examined: India, Manipur, Chandal, Moreh, *K. Ravikumar& R. Vijaya Sankar* 106756, dated 29.08.2007 (in flowers & fruits).

Distribution: South America; naturalized in Taiwan, S and SE Asia including India [Madhya Pradesh, Kerala; recently reported from Assam by Das (2013) and now from Manipur].

Acmella uliginosa (Swarz) Cassini in F. Cuvier, Dict. Sci. Nat. 24: 331. 1822. *Spilanthes uliginosa* Swarz, Nov. Gen. Pl. Seu Prodr. Descr. Veg. Ind. Occ. 110. 1788; Sivarajan & Matthew in Anc. Sci. Life 3: 169.1984; Chowdhery in Hajra *et al.*, Fl. India 12: 412. 1995. [Asteraceae]

Annual herbs, up to 45 cm, decumbent; rooting at lower portions. Stems sparsely pilose when young, ribbed when mature. Lamina narrowly ovate-lanceolate, $3-5\times1.5-2.5$ cm, crenate-serrate, acute, base attenuate, glabrous on both sides, sparsely ciliate; petioles canaliculate, hispid hairy along the sides, base sheathing. Capitula radiate, solitary or 2 to 3, terminal, ovoid, $ca7\times5$ mm; peduncles up to 6 cm long, sparsely pilose; involucre uniseriate, lanceolate; ray florets 4-7; corollas yellow, 3-toothed; disk florets many, yellow, 4-merous; corollas funnel shaped; achenes dimorphic, black, ciliate; pappus of 2 bristles.

Flowers & Fruits: July – December

Specimen examined: India, Manipur, Moreh, *K. Ravikumar & R. Vijaya Sankar 106717*, dated 29.08.2007 (in flowers & fruits).

Distribution: Africa, America, Asia, Indonesia, Sri Lanka, New Guinea, Philippines; naturalized in Hong Kong, Taiwan, Pacific islands and India (Tamil Nadu, West Bengal and now from North East India).

Aspidopteris floribunda Hutchinson in Bull. Misc. Inform. 1917: 95. 1917. *A. glabriuscula* A. Jussieu var. *brevicuspis* Niedenzu in Arbeitn Bot. Inst. Koenigl. Lyceums Hosianum Braunsberg 6: 15. 1915. [Malpighiaceae]

Climbers; young plant parts ferruginous hairy. Lamina elliptic, $9-12.5 \times 4-6.5$ cm, acuminate, base rounded, glabrous above, appressed pubescent on nerves beneath; petioles 10-12 mm long. Panicles $ca18 \times 10$ cm, rusty pubescent when young; pedicels fasciculate, ca6 mm long, rusty. Samaras oblong, $ca4 \times 1.8$, pale brown, articulation prominent.

Flowers & Fruits: May – November

Specimen examined: India, Manipur, Imphal West, Enroute Noney from Imphal, K. Ravikumar &R. Vijava Sankar 107862, dated 02.09.2007 (in fruits).

Distribution: China and India (Assam, Meghalaya, Sikkim and now from Manipur)

Blumea clarkei J.D. Hooker, Fl. Brit. India 3: 267. 1881; Kumar, in Hajra et al., Fl. India 13: 121. 1995. B. malabarica J.D. Hooker in Fl. Brit. India 3: 267. 1881. [Asteraceae]

Erect perennials herb, up to 75 cm high, usually unbranched. Leaves subsessile, basal leaves obovate, upper ones elliptic to oblanceolate, $2-7 \times 1.2-4$ cm, remotely serrate-dentate with mucronate teeth, acute-apiculate, base auriculate-cordate, gray when dry, scattered with multicellular trichomes above, glabrescent below. Capitula terminal, often compact; peduncles up to 2 cm; involucre ca 6-seriate; outer phyllaries ovate-lanceolate, hairy on dorsal surface; inner linear-lanceolate, margin scarious; receptacles densely pilose; flowers bisexual, yellow. Achene pale brown, oblong, ribbed; pappus white.

Flowers & Fruits: October – February

Specimen examined: India, Manipur, Imphal West, Langol Hill range, *N. Balachandran* & P. Patchaimal 111781, dated 12.11.2011 (in flowers & fruits).

Distribution: China, Indonesia, Myanmar, Philippines, Thailand, Vietnam and India (Assam, Sikkim, Karnataka, Maharashtra, Andaman & Nicobar Islands and now from Manipur).

Boehmeria rugulosa Weddell, Ann. Sci. Nat., Bot. IV, 1: 200. 1854; Grierson & Long in Fl. Bhutan. 1(1): 125. 1983. [Urticaceae]

Dioecious trees, up to 5 m high. Lamina narrowly ovate-lanceolate, $9-12\times 2-4$ cm, crenulate, acute, base rounded, softly white pubescent beneath, thick-coriaceous, glaucous beneath, strongly 3-veined to apex, reticulation prominent; petioles 2 – 4 cm, minutely grey pubescent; stipules ovate, deciduous. Flowers in interrupted spikes, borne at leaf scar axils, 8-12 cm long; bracts broadly ovate; usually one flower per axil, sometimes 2-3; perianth tubular, margin ciliate. Styles filiform, brown hairy, persistent. Achenes enclosed by perianth.

Flowers & Fruits: October – February

Specimen examined: India, Manipur, Chandal, Meilon Hill range, N. Balachandran & P. Patchaimal 111796, dated 13.11.2011 (in fruits).

Distribution: Bhutan and India (Sikkim and now from Manipur).

Chamaecrista auricoma (Graham ex Bentham) Singh in J. Econ. Taxon. Bot. 16 (3): 600. 1992; Singh, Mono. Ind. Sub. Cass. 88 – 90. 2001. Cassia auricoma Graham in Wall. Cat. No. 3522. 1831-32, nom. nud. C. mimosoides Linnaeus, f. auricoma Graham ex Bentham in Trans Linn. Soc. London 27: 580. 1871. C. mimosoides Linnaeus var. auricoma (Graham ex Bentham) Baker in J.D. Hooker, Fl. Brit. India 2: 266. 1878. C. mimosoides Linnaeus subsp. lechenaultiana (de Candolle) Ohashi var. auricoma (Graham ex Bentham) Ohashi in J. Jap. Bot. 50: 308.1975. [Fabaceae; subfamily: Caesalpinioideae]

Annual herbs, up to 65 cm high, with adpressed and curved hairs. Leaves 7.5 - 9 cm long; leaflets 20 – 37 pairs, oblong, margin ciliate, apex acute-mucronate, base oblique, glabrous above, mid-nerve raised beneath; gland solitary, sessile, seated on the rachis just below the lowest pair of leaflets; stipules broadly ovate, acuminate-aristate, obliquely cordate-truncate at base, veins distinct. Racemes supra axillary, 1-3 flowered; bracts ovate, acuminate. Corolla yellow, equaling calyx; stamens 7, all fertile, unequal. Styles stout, thickening upwards, glabrous, ciliate at tip. Pods pilose when young.

Flowers & Fruits: September – December

Specimen examined: India, Manipur, Imphal West, Erilbong, *K. Ravikumar & R. Vijaya Sankar 107407*, dated 03.09.2007 (in flowers & fruits).

Distribution: Sri Lanka, Malaysia, Indonesia, China, Nepal, Africa and India (Andhra Pradesh, Tamil Nadu, Kerala, Uttar Pradesh, Arunachal Pradesh and now from Manipur).

Chamaecrista wallichiana (de Candolle) Singh in J. Econ. Taxon. Bot. 16 (3): 600. 1992; Singh, Mono. Ind. Sub. Cass. 88-90. 2001. Cassia wallichiana de Candolle in Mem. Phys. Hist. Nat. Geneve 2(2): 133. 1824 & Prodr. 2: 505. 1825. C. dimidiate Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 247. 1825. C. mimosoides Linnaeus. var. wallichiana (de Candolle) Baker in J.D. Hooker, Fl. Brit. India 2: 266. 1878. [Fabaceae; subfamily: Caesalpinioideae]

Erect herbs, up to 80 cm. Young stems with curved hairs. Leaves to 10 cm long; rachis puberulous; leaflets 12-27 pairs, oblong, margins ciliate, apex acute-apiculate, base oblique, gland solitary, located just below the first pair of leaflets. Stipules lateral, ovate, 6-11 mm, apex long acuminate-aristate, base obliquely truncate, with prominent nerves. Flowers solitary at lower leaf axils, up to 4 in upper axils, supra axillary. Sepals acute-acuminate; petals yellow; stamens all fertile, unequal. Pods $4-5\times0.5$ cm, flat, pubescent, valves coiling on dehiscence. Seeds ca 13, oblong, brown, shiny, without areole.

Flowers& Fruits: August –January

Specimen examined: India, Manipur, Imphal West, Langol Hill range, *N. Balachandran & P. Patchaimal 111782*, dated 12.11.2011(in flowers & fruits).

Distribution: Nepal, Bhutan, Pakistan, Zaire and India (Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, Bihar, Assam, Gujarat, Karnataka, Andhra Pradesh, Tamil Nadu, Kerala and now from Manipur).

Clerodendrum farinosum (Roxburgh) Wallich [Numer. List 49, No. 1810. 1829, nom. nud.] ex Steudel, Nomencl. Bot. ed. 2, 1: 382. 1840; Walpers, Reprt. Bot. Syst. 4: 107. 1845 (as "Clerodendron"); Mabberley in Manilal. Bot. Hist. Hort. Malab. 93. 1980; P. Daniel & Rajendran in Taxon 42: 670. 1993 & in Bull. Bot. Surv. India. 35: 110, f.1.1997; Rajendran & Daniel in Ind. Verb. 102. 2002; Deori et al., Pleione 7(2): 477. 2013. Volkameria farinosa Roxburgh [Hort. Bengal. 46. 1814, nom. nud.], Fl. Ind. 3: 64, 1832. C. venosum Wallich ex C.B. Clarke in J.D. Hooker, Fl. Brit. India 4: 592, 1885, nom. illeg. incl. type of Volkameria farinosa Roxburgh (as "Clerodendron"). [Lamiaceae]

Small trees, up to 3 m high; bark grey to dark brown. Stems obtusely 4-angular, glabrous. Lamina elliptic-oblanceolate, $13-17\times4-6$ cm, distantly serrate, acute to shortly acuminate, base cuneate, chartaceous, dark green above pale below, glabrous on both sides; petioles up to 2 cm long; lateral nerves 6-8 pairs. Thyrses terminal and axillary; bracts broadly ovate to oblong, persistent. Calyx copular; corolla white-purple; stamens 4, didynamous; filaments exserted. Drupes obovoid, fruiting calyx copular, membranous, glabrous.

Flowers & Fruits: June – December.

Specimen examined: India, Manipur, Imphal West, Enroute Noney from Imphal, *K. Ravikumar & R. Vijaya Sankar*, *FRLH 107402*, dated 02.09.2007 (in flowers & fruits).

Distribution: Thailand and India (Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland and now from Manipur).

Ficus heteropleura Blume, Bijdr. Fl. Ned. Ind. 9: 466. 1825; Wight, Icon. Pl. Ind. Orient. 2: t. 636. 1843; Sreekumar in J. Econ. Taxon. Bot. 22: 200. 1998. F. radicans Roxburgh, Fl. Ind. 3: 536. 1832 (non Desfontaines 1829); Wight, Icon. Pl. Ind. Orient. 2: t. 671. 1843. F. urophylla Wallich ex Miquel, Hook. London J. Bot. 7: 429. 1848; King, Ann. Roy. Bot. Gard. (Calcutta) 1: 11, t. 9. 1887 & in Hooker f., Fl. Brit. India 5: 498. 1888; Brandis, Indian Trees. 599. 1906. [Moraceae]

Straggling shrubs. Lamina oblong-oblanceolate, $8-14\times2.2-3.8$ cm, margin entire at lower half, undulate at upper half, caudate-acuminate, base slightly asymmetric, attenuate, thinlycoriaceous, cauda (acumen) 1.5 - 2.5 cm; veins 5 - 7 pairs, conspicuous on both sides when dry. Figs stalked, axillary, usually paired, sometimes solitary, on leafy shoots, ca 8 mm across. Male flowers: near apical pore, subsessile; calyx lobes-4, linear; stamen 1, rudimentary ovary present; gall flowers: shortly pedicellate; calyx lobes-3; ovary globose; styles lateral, short, curved; female flowers: calyx lobes deeply 3-lobed; styles persistent, long; stigma funnel form. Achenes obliquely ovoid, coarse.

Flowers & Fruits: October – February

Specimen examined: India, Manipur, Chandal, Meilonhill range, N. Balachandran & P. Patchaimal 11796, dated 13.11.2011(in fruits).

Distribution: Bangladesh, Bhutan, Cambodia, China, Indonesia, Malaysia, Myanmar, Philippines, Taiwan, Thailand, Vietnam and India (Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Tripura, West Bengal and now from Manipur).

Indigofera arrecta C.F.F. Hochstetter ex A. Richard, Tent Fl. Abyss. 1:184. 1847; Haines, Bot. Bihar Orissa 3: 239. 1922 (Repr. 2: 250. 1961); Bahadur et al. in J. Bomb.Nat. Hist. Soc. 70: 497. 1973; Raizada, Suppl. Fl. Upp. Gang. Pl. 53. 1976; Sanjappa in Fasc. Fl. India 21: 15. 1995. [Fabaceae; subfamily Papilionoideae]

Erect, under shrubs, 1-2.5 m tall; stems striate, with adpressed strigose. Leaves ca10 cm long; rachis shallowly canaliculated above, deepened at petiole; stipules subulate, deciduous; leaflets usually 15, elliptic-oblanceolate, terminal one obovate, entire, apiculate, base cuneate, grey adpressed pubescent on both sides, drying blackish. Racemes 6-8 cm long, axillary, many flowered, dense; flowers pink. Pods deflexed, straight, sub-tetragonal, apiculate, thinly adpressed pubescent. Seeds up to 8, oblong, cylindrical, smooth.

Flowers & Fruits: August – December

Specimen examined: India, Manipur, Moirang National Park, K. Ravikumar & R. Vijaya Sankar, 106759, dated 31.08.2007 (in flowers & fruits).

Distribution: Saudi Arabia, Cameroon, Congo, Eritrea, Gambia, North Yemen, Sudan, S. Africa, Tropical Africa, SE Asia and India (Andaman & Nicobar Islands, Bihar, Karnataka, Uttar Pradesh, West Bengal and now from Manipur in North East India).

Indigofera astragalina de Candolle, Prodr. 2: 228. 1825; Gillett in Kew Bull. 14: 290. 1960; Sanjappa, Leg. Ind. 185. 1992; *Ibid.*, Fasc. Fl. Ind. 21: 20. 1995. *I. hirsute auct. non* Linnaeus. 1735; J.D. Hooker, Fl.Brit. India 2: 98. 1876, p.p.; Grierson & Long, Fl. Bhutan 1: 663. 1987. [Fabaceae; subfamily Papilionoideae]

Annual, erect herbs, up to 1.5 m tall. Stems and branches angular when young clothed with pilose hairs, reddish brown when mature. Leaves imparipinnately compound; petioles 1.5 – $2.0 \,\mathrm{cm} \,\mathrm{long}$; rachis $4-7 \,\mathrm{cm} \,\mathrm{long}$, hirsute; leaflets 5-9, opposite, elliptic-oblong to obovate, mucronate at apex, pilose on both surfaces; petiolules ca 2 mm long. Racemes axillary, up to 204 Additions to the flora of Manipur

30 cm long, densely brown hirsute hairy. Flowers densely arranged, brick-red. Pods subtetragonal, $15 - 18 \times 2 - 3$ mm, hirsute. Seeds up to 6, tetragonous, brown.

Flowers & Fruits: October – February

Specimen examined: India, Manipur, Churachandpur, Khuga Dam, *N. Balachandran & P. Patchaimal 111753*, dated 11.11.2011(in flowers & fruits).

Distribution: Australia, China, Pakistan, S.E. Asia, S. Africa, W. Indies and India (distributed throughout the plains, and now from Manipur in North East India).

Lespedeza floribunda Bunge, Pl. Monog. China: 13. 1833; Parker, For. Fl. Punj. 148. 1934; Ali, Biologia 12: 38. 1966; Sanjappa in Leg. India. 203. 1992. [**Fabaceae**; subfamily **Papilionoideae**]

Erect, subshrubs, up to 75 cm high. Branchlets grayish-white tomentose. Stipules lateral, persistent, ovate, apex long acuminate-acicular, base truncate. Leaves 3-foliolate; leaflets obovate, terminal ones $1.0-1.8\times0.6-1.3$ cm, apex obtuse-round or subtruncate, mucronate, base cuneate, glabrous above, densely white adpressed pubescent below, margins ciliate; venation prominent. Racemes axillary; peduncles slender, distinctly overtopping leaves. Bracts ovate-lanceolate, white appressed hairy without, glabrous within. Flowers numerous. Calyx 5 lobed, 4-5 mm; lobes lanceolate, extending almost half of the pod, upper 2-lobes connate at lower part, free above. Pods oblong-ovoid, $ca\ 7\times 5$ mm, densely pubescent, reticulately veined. Seed one.

Flowers & Fruits: October – January

Specimen examined: India, Meghalaya, East Khasi, Maw Phlang, *N. Balachandran & P. Patchaimal*, *112109*, dated 18.11.2011(in fruits).

Distribution: China, Mangolia, Pakistan and India (Jammu – Kashmir, Punjab and now from Manipur in North Eastern India).

Solanum barbisetum Nees, Trans. Linn. Soc. Lond. Bot. 17: 51. 1837; Kanjilal *et al* in Fl. Ass. 3: 370. 1939; Grierson & Long, Fl. Bhutan. 2(3): 1058. 2001; J.D. Hooker, Fl. Brit. India. 4: 233. 1885. *S. eriophorum*, Dunal in de Candolle, Prodr. xiii. pt. i. 249. *S. involucratum* Kurz, For. Fl. ii. 224, not of Blume. [Solanaceae]

Under shrubs, up to 1 m tall. Stems armed with flat, 3-6 mm broad-based curved prickles, and stellate pubescent hairs. Lamina sinuate-lobed, acute, base oblique, truncate-cuneate, sparsely prickly along the petiole and main nerves, sometimes along the side veins; prickles flat, straight. Racemes scorpioid, 5-9 cm long, supra axillary, almost $1/3^{\rm rd}$ below node, many-flowered; pedicels 10-20 mm long, prickly. Calyx campanulate, lobes oblong-lanceolate, densely pubescent, pale yellow, stellate hairs; corolla violet. Berries globose, glabrous, ca 1.2 cm across. Seeds minutely villous.

Flowers & Fruits: October – December

Specimen examined: India, Manipur, Imphal West, Senjam Chapron, *N. Balachandran & P. Patchaimal 111685*, dated 08.11.2011(in flowers & fruits).

Distribution: Bangladesh, Bhutan, Laos, Thailand and India (Sikkim & West Bengal and now from Manipur).

Spermacoce verticillata Linnaeus, Sp. Pl. 102. 1753; Deb & Dutta, J. Econ. Tax. Bot. 5: 1060. 1984; Ridsdale in Dassa., Fl. Ceylon.21: 334. 1998. *Borreria verticillata* (Linnaeus) G. Meyer, Fl. Essequib 83. 1816. [Rubiaceae]

Perennial herbs, up to 65 cm high; stems 4-angular, sparsely pubescent. Leaves opposite, but appearing pseudo-verticillate at upper axils, elliptic-oblanceolate, $4-6\times0.5-1.2$ cm, usually glabrous on both sides, pale below. Flowers in axillary clusters. Calyx-lobes cuspidate; corolla white; styles exserted. Capsules obovoid, spiliting in two valves. Seeds strongly pitted.

Flowers & Fruits: August – December

Specimen examined: India, Manipur, Imphal West, Enroute to Noney from Imphal, K. Ravikumar & R. Vijaya Sankar 107868, dated 02.09.2007 (in fruits).

Distribution: Tropical America, West Africa, S.E. Asia including India. It is a new record for Manipur.

DISCUSSION

Eastern Himalaya is a part of the Himalaya biodiversity Hotspot, which includes eight northeast Indian States. Manipur is one among those. The present study focused on inventorying the medicinal flora of Manipur. The perpetual explorations result in the form of new additions to a particular State, new records to the country and new additions to the science are continuous event in the north east region. However due to various means such as habitat destruction, improper resource management, over exploitation, climate change, domination of invasive, wild weeds, gap colonizers and seed dispersal have led way to exotic weed invasion. Acmella ciliata and A. uliginosa are American weeds those are now naturalized in India. And, plants and animals have no boundary limit in any geographic region. Most of the elements from the study region have geographic relevance to China, Myanmar and Malaysia. Interestingly, some of the elements presented here are represented in the neighbouring countries: Aspidopteris floribunda and Lespedeza floribunda to Indo-China; Clerodendrum farinosum and Solanum barbisetum are Indo-Myanmar; Blumea clarkei, Chamaecrista auricoma and Ficus heteropleura are restricted to Asian countries; Chamaecrista wallichiana is from Indo-Pakistan; Boehmeria rugulosa is endemic to Bhutan and now extended to India; Indigofera arrecta and Spermacoce verticillata are from tropical countries and *Indigofera astragalina* is a cosmopolitan element. Chaudhary et al. (2012) in his Synopsis of the Genus Ficus, has not mentioned about the distribution of Ficus heteropleura in Manipur. Therefore, these biodiversity rich areas of North-east India should be botanically thoroughly explored in order to unearth the hidden treasures.

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