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34. ADDITIONS TO THE FLORA OF BIHAR

The present communication highlights the occurrence and distribution of some rare and interesting angiosperms from eastern parts of Bihar state. During a detailed floristic exploration (1986-91) of eastern Bihar (23° 40' – 26° 35' N, 85° 30' – 88° 32' E), we could collect *Blumea obliqua* (L.) Druce (Asteraceae); *Calamus latifolius* Roxb. (Arecaceae); *Canavalia cathartica* Thouars. (Fabaceae); *Dendrobium peguanum* Lindl. (Orchidaceae); *Elatostema cuneatum* Wight (Urticaceae); *Eragrostis aspera* (Jacq.) Nees (Poaceae); *Exacum carinatum* Roxb. (Gentianaceae); *Fimbristylis albiviridis* Clarke (Cyperaceae); *Peemna coriacea* Clark (Verbenaceae); *Spilanthes iabadicensis* A. H. Moore (Asteraceae) and *Stephania glandulifera* Miers (Menispermaceae). These taxa have not been recorded earlier from Bihar (Haines 1921-25, Mooney 1950, Bressers 1951, Panigrahi 1966, Srivastava 1959, Varma 1981, Singh 1986).

Hence the present collection and the distributional notes of these taxa would be of interest in highlighting their extended range of distribution in new areas not recorded earlier and it will also help in their conservation, as some of them are often used by tribal people. Brief descriptions, distribution and ecology of the species are given below. All the cited specimens have been deposited in the Bhagalpur University Herbarium, Bhagalpur. The identifications of the specimens have been confirmed at the Central National Herbarium (CAL).

Blumea obliqua (L.) Druce in Rep. Bpt. Exch. Club. Brit. Isles 4:609.1916(1917); Randeria, *Blumea* 10(1) : 286. 1960. *Erigeron obliquum* L. Mant. 2:573.1771. *Blumea amplexans* DC. in Wight Contrib. Bot. Ind. 13.1834; Hook. f. Fl. Brit. Ind. 2: 260. 1881; Haines, Bot. Bih. & Oris. 2: 491.1961 (Repr. ed.).

Annual herb, up to 50 cm high, much branched;

stems puberulous, leaves 2-9 cm long, upper amplexicaul, scabrous to velutinous; capitula solitary, 6-8 mm in diameter, terminal or in the axil of upper leaves; pedunculate, peduncles up to 5 cm long; achenes brown, pubescent, not ribbed; pappus white.

Flowering and fruiting: March-July.

Distribution: INDIA: Bengal, Orissa; Ceylon.

Ecology: Dry as well as wet places in waste lands, river banks; rare.

Specimens examined: Sakrigali (Sahibganj Dist.), Sriwastawa 4625; Jamalpur (Munger Dist.), Jha 7125.

Calamus latifolius Roxb., Fl. Ind. 3: 775. 1832; Hook. f. Fl. Brit. Ind. 6: 455. 1892; Haines, Bot. Bih. & Oris. 3:928. 1961 (Repr. ed.): Prain, Bengal Plants 2:827. 1963 (Repr. ed.).

A stout erect or scandent armed shrub; leaves rachis produced into a long flagellum, armed with recurved prickles; leaflets elliptic or elliptic-lanceolate; male spikes 6-15 cm long, flowers green, 4-7 mm long; female spikes 8-12 cm long, flowers greenish yellow, minute. Fruits 0.3-0.6 mm long, sub-globose, pale yellow.

Flowering and fruiting: December-April.

Distribution: INDIA: Assam, Bengal, Orissa and Sikkim Himalaya; Burma.

Ecology: In waste land, along railway embankment; rare.

Specimens examined: Mangalhat (Sahibganj dist.), Varma 2228; Shivnarayanpur (Bhagalpur dist.), Jha 6326.

Canavalia cathartica Thouars. in J. Bot. Desv. 1:81. 1813; Saucer, Brittonia 16: 159.1964; Guha Bakshi, Fl. Murshidabad 101. 1984. *C. ensiformis* (L.) DC. var. *turgida* (Grah. ex Miq.) Baker in Hook. f. Fl. Brit. Ind. 2:196.1876.

Local name: Tihon (Santhali).

Perennial climber; leaves 3-foliolate; flowers

purple, upto 3 cm long; pods 15-20 x 3.5-4.2 cm. straw coloured, turgid; seeds 5-11, 2-2.8 mm long, pale cream.

Flowering, fruiting: September-April.

Distribution: INDIA: Maharashtra, Karnataka, Tamil Nadu, Orissa, West Bengal, Andaman and Nicobar islands; Sri Lanka, Madagascar.

Ecology: In mixed forests: rare.

Specimens examined: Gilamari (Sahibganj dist.), Jha 6351.

Uses: The seeds and young fruits are eaten.

Dendrobium peguanum Lindl. in J. Linn. Soc. Bot. 3.19. 1859; Hunt, Kew Bull. 24: 90.1970. *D. pygmaeum* Lindl. Gen. Sp. Orch. Pl. 85.1830 (non Sm. 1918); Hook. f. Fl. Brit. Ind. 5:717.1890; Haines, Bot. Bih. & Oris. 3:1224.1961 (Repr. ed.).

A small densely tufted epiphyte upto 4 cm long, with greenish ovoid pseudobulbs; leaves 2-3, linear, caducous; racemes upto 3 cm long; flowers white or pale purple; sepal's linear, 6-8 mm long, lateral decurved; petals oblanceolate, lip obovate, mid-lobe triangular crisped, disc with crenate fleshy ridges.

Flower and fruits: December-March.

Distribution: INDIA: Bengal, Orissa.

Ecology: In mixed forests growing on *Syzygium cumini* (L.) Skeels; rare.

Specimens examined: Silingi (Dumka Dist.), Singh 5447; Jha 6285.

Elatostema cuneatum Wight, Ic. t. 2091. f. 3.1853; Hook. f. Fl. Brit. Ind. 5:564.1886; Gamble, Fl. Madras 1377 (963).1928; Saldanha and Nicolson, Fl. Hassan Dist. 88.1976; Babu, Fl. Dehradun 467.1977.

Monoecious, slender, erect, annual herbs, upto 15 cm tall; leaves simple, alternate, sessile, falcate-cuneate or obovate, aggregated towards the tops; upper leaves upto 2x1 cm, oblique, crenate-serrate above the middle, entire below, sparsely ciliate and marked with numerous cystolith above; lower leaves smaller than the upper; flowers minute, regular, sub-sessile, arranged on axillary involucrate receptacle; bracteoles many, mixed with flowers, linear-oblong, ciliate at the tip; male flowers white, restricted to the top most or the next lower receptacle, intermingled with female flowers; perianth lobes 4, ovate, obtuse, glabrous; stamens 4; female flowers numerous; perianth lobes 3-4; style penicillate; achenes reddish brown, ellipsoid, ribbed, glabrous, 0.5 mm long.

Flowering, fruiting: September-April.

Distribution: INDIA: Eastern and Western Ghats, Sikkim Himalaya, Dehra Dun, Meghalaya.

Ecology: Along stream banks in ravines, on moist rocks and at the base of trees; rare.

Specimens examined: Motijharna, 2.5 km south-west of Maharajpur railway station (Sahibganj dist.), Jha 6327.

Eragrostis aspera (Jacq.) Nees, Fl. Afr. Austr. 408.1841; Hook. f. Fl. Brit. Ind. 7: 314. 1896; Bor Gr. Burma, Ceylon, Ind. & Pak. 501. 1960, Patunker, Gr. Marath. 245. 1980. *Poa aspera* Jacq. Hort. Vindob. 3: 32. 1776.

Annual, up to 1 m high; culms erect, much branched, glabrous; leaf-blades 10-30 x 0.4-0.8 cm, linear-lanceolate, glabrous, acuminate; ligules a ciliate rim; panicles 50 x 20 cm, thyriform, ovate-oblong; spikelets up to 20-flowered, 4-10 mm long, white; glumes 0.6-1.2 mm long, narrowly oblong, 1-nerved; lemmas 1.2-1.7 mm long, elliptic-oblong, 3-nerved; palea 2-keeled, scabrid; stamens 3; anthers 0.1-0.3 mm long, pink; caryopsis 0.3-0.5 mm long, subglobose.

Flowering, fruiting: August - December.

Distribution: INDIA: Rajasthan, Marathwada, south India; Africa, Mascarene islands, Australia.

Ecology: In cultivated land; rare.

Specimens examined: Mirzachowki (Sahibganj dist.), Jha 6631.

Exacum carinatum Roxb., Fl. Ind. 1:415. 1820; Ramamoorthy in Fl. Hassan Dist. 425. 1976. *E. petiolare* Griseb in DC. Prodr. 9:46.1845; Clarke in Fl. Brit. Ind. 4:98. 1883; Haines, Bot. Bih. & Oris. 2: 595. 1961 (Repr. ed.).

An annual herb, up to 15 cm high; leaves elliptic-ovate, 3-7.5 cm long, base broad, glabrous, up to 7-nerved, acuminate, petiole short; flowers white or bluish, axillary and in terminal cymes, tetramerous; calyx and corolla 4-lobed; fruits up to 6 mm long, winged; seeds small, brown, angled, subquadrate.

Flowering, fruiting: September - December.

Distribution: INDIA: Karnataka, central and south-west India.

Ecology: On moist rocks under shade; rare.

Specimens examined: Karanpurato (Sahibganj dist.), Jha & Singh 6546.

Fimbristylis albiviridis Clarke in Hook. f. Fl. Brit. Ind. 6:638. 1893; Kern in Fl. Malesiana, 580. 1974; Rao & Varma, Cyp. N. E. Ind. 35. 1982.

A tufted annual, up to 10 cm high; culms slender, compressed, glabrous; leaves slightly falcate, flat, obtuse to acute, ligulate, spikes loose, with few to several spikelets, whitish green; spikelets solitary, 4-7 mm long, ovoid to oblong-ovoid, many-flowered, acute; glumes broadly ovate, 1.5-2 mm long, subchartaceous, glabrous, with 3-nerved keel; stamens 1; style slightly dilated at the base, upper ciliate; stigmas 2; achenes shortly stipitate, obovoid, 1 mm long, verruculose, trabeculate, with 10-16 vertical rows on each surface.

Flowering and fruiting: August - December.

Distribution: INDIA: Assam, Meghalaya, Madhya Pradesh; Bangladesh, Malaysia.

Ecology: In open wasteland; rare.

Specimens examined: Bandanwar (Godda dist.), Varma & Jha 7302.

Premna coriacea Clarke in Hook. f. Fl. Brit. Ind. 4: 573. 1881; Haines, Bot. Bih. & Oris. 2: 749. 1961 (Repr. ed.).

A woody climber. Leaves 5-10 cm long, broadly oblong or ovate, caudate, glabrous, acuminate, base rounded, smooth; panicles up to 3 cm long; flowers 2-6 mm long, white, scented; bracts filiform, caducous; calyx cupular truncate; corolla tube 1-2.5 mm long, throat-bearded; drupe narrowly obovoid; seed 1.

Flowering and fruiting: March - July.

Distribution: INDIA: Western Deccan Peninsula, Orissa.

Ecology: Along stream banks; rare.

Specimens examined: Karamtola (Sahibganj dist.), Jha 7141.

Uses: The leaves are used as fodder.

Spilanthes iabadicensis A. H. Moore, Proc. Amer. Acad. Arts. 42: 542. 1907; Koster & Philipson, Blumea 6: 354. 1950; Grierson in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 1: 221. 1980.

Herbs, up to 40 cm high; stems weak, decumbent, rooting at the lower nodes, sparsely pubescent when young; leaves 1-5 x 0.5-2.5 cm, narrowly ovate or elliptic, acuminate, margins undulate or serrate-dentate; capitula conical-ovoid, 3-5 mm in diameter, radiate, yellow; peduncles 2-5 cm long; ray flowers 1.5-2 mm long, ligulate, 3-lobed, yellow; disc flowers 1-1.25 mm long, 3-5-lobed; achenes 1-1.75 mm long, black with pale margins, sparsely and weakly ciliate along both margins or sometimes only one; pappus weak fragile, 0.25 mm long.

Flowering and fruiting: Throughout the year.

Distribution: INDIA: Madhya Pradesh; Sri Lanka, Sumatra, Java, New Guinea.

Ecology: Moist grounds, rice-fields and ditches; common.

Specimens examined: Chattarpur (Saharsa dist.), Sinha 501; Babupur (Sahibganj dist.), Jha 7115; Jamalpur (Munger dist.), Jha 6598.

Stephania glandulifera Miers in Contr. Bot. 3: 220. 1871; Kanjilal, Fl. Assam. 1: 52. 1934; Whitmore, Enum. Fl. Pl. Nepal 2: 28. 1979. *S. rotunda* auct. non Lour.; Hook. f. & Thoms., Fl. Brit. Ind. 1: 103. 1872 p. p.

Local name: Patal Kumhra (Sauria Paharia).

A dioecious climber with globose tuberous roots, 10-15 cm in diameter, deep-yellow inside; leaves orbicular, 7-15 cm in diameter, peltate, margins entire, membranous, glabrous, basal nerves 9; petiole 7-18 cm long; female flowers in cymose umbels, yellow-orange, peduncles axillary; sepals 6, obovate, narrow; petals shorter than the sepals, obovate.

Flowering and fruiting: July - October.

Distribution: INDIA: Himalaya, Assam, Arunachal Pradesh.

Ecology: In mixed forests; rare.

Specimens examined: Angwali (Dumka dist.), Varma & Jha 7163.

The medicinal uses ascribed to *Stephania glandulifera* Miers are perhaps due to its superficial resemblance with the tuber of *Pueraria tuberosa* DC. of Fabaceae having a similar local name. The latter is commonly used for renal and bowel complaints (Haines l.c.). However, critical examination, both in the field and in the garden helped us in the correct identification of the former, which has not been recorded earlier from Bihar.

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35. ADDITIONAL HOST SPECIES FOR *LORANTHUS* AND THEIR LOCALITIES IN THANJAVUR DISTRICT, TAMIL NADU

The phorophytes or host trees in dry evergreen forest provide ideal habitats for epiphytic orchids and semiparasitic plants. *Sapindus emarginatus*, *Diospyros ferrea* and *Borassus flabellifer* are common phorophytes. *Cymbidium aloifolium*, *Vanda spathulata* and *V. tessellata* are the epiphytic orchids in Thanjavur district.

Dendrophthoe falcata, *Viscum orientale* and *V. capitellatum* are the destructive semi-parasites found on a number of plants. According to Singh (1963),

319 species of plants are attacked by these parasites in India. Balasubramanian *et al.* (1986) reported 29 host species in Point Calimere, Thanjavur dt. We found an additional 22 new host species for this parasite in Thanjavur district as a result of a 3 year study. The complete list of host plants from this district is presented in Table 1.

The host species that are new records for India are marked with an asterisk and plus mark denotes double parasitism. One species being parasitic on

TABLE 1
LIST OF HOST SPECIES FOR *Loranthus* AND THEIR LOCALITIES

<i>Acacia leucophloea</i> Willd. (Manakkal)	* <i>Ehretia pubescens</i> Benth. (Melathottum)
<i>Aegle marmelos</i> (L.) Corr. (Vallum)	* + <i>Excoecaria agallocha</i> L. (Pazhayar)
<i>Alangium salviifolium</i> (L.f.) Wang. (Peravurani)	<i>Ficus benghalensis</i> L. (Kodiakkarai RF)
* <i>Albizia amara</i> (Roxb.) Boivin (Peravurani)	* <i>F. racemosa</i> L. (Mailaduthurai)
<i>A. lebbeck</i> (L.) Benth. (Kodiakkarai)	<i>F. religiosa</i> L. (Kodiakkarai RF)
* <i>Anacardium occidentale</i> L. (Avanam)	<i>Gmelina asiatica</i> L. (Pazhayar)
<i>Artocarpus heterophyllus</i> Lam. (Mailaduthurai)	<i>Grewia rhamnifolia</i> Heyne ex Roth. (Poompuhar)
* <i>Azadirachta indica</i> Juss. (Ammapet)	* <i>Hugonia mystax</i> L. (Kodiakkarai RF)
* <i>Bombax ceiba</i> L. (Melathottum)	+ <i>Ixora pavetta</i> Andr. (Kodiakkarai RF)
<i>Cadaba fruticosa</i> (L.) Druce (Peravurani)	* <i>Jatropha curcas</i> L. (Kallimedu)
* <i>Calophyllum inophyllum</i> L. (Velankanni)	+ <i>Lannea coromandelica</i> (Houtt.) Merr. (Kodiakkarai RF)
<i>Canthium parviflorum</i> Lam. (Kodiakkarai RF)	+ <i>Lepisanthes tetraphylla</i> (Vahl) Radlk. (Periakuthakai)
* <i>Carmona retusa</i> (Vahl) Masam. (Melathottum)	+ <i>Manilkara hexandra</i> (Roxb.) Dubard (Kodiakkarai RF)
<i>Cassia fistula</i> L. (Kodiakkarai RF)	+ <i>Mangifera indica</i> L. (Ammapet)
<i>C. roxburghii</i> DC. (Kodiakkarai RF)	<i>Maytenus emarginata</i> (Willd.) Ding Hou (Kodiakkarai RF)
<i>C. siamea</i> Lam. (Melathottum)	<i>Memecylon edule</i> Roxb. (Kodiakkarai RF)
<i>Casuarina litorea</i> L. (Pazhayar)	* + <i>Mimusops elengi</i> L. (Ammapet)
<i>Catunaregam spinosa</i> (Thunb.) (Tirven.) (KRF)	* <i>Morinda pubescens</i> J.E. Smith (Melathottum)
<i>Carissa spinarum</i> L. (Kodiakkarai RF)	+ <i>Pithecellobium dulce</i> (Roxb.) Benth. (Kodiakkarai RF)
<i>Cissus vitiginea</i> L. (Kodiakkarai RF)	+ <i>Pongamia pinnata</i> (L.) Pierre (Kodiakkarai RF)
+ <i>Commiphora caudata</i> Engl. (Kodiakkarai RF)	<i>Prosopis chilensis</i> (Molina) Stuntz. (Manakkal)
<i>Cordia obliqua</i> Willd. (Kodiakkarai RF)	* <i>Rhizophora apiculata</i> Blume (Pazhayar)
<i>Crateva adamsonii</i> DC. (Rajamadam)	* + <i>Salvadora persica</i> L. (Kodiakkarai RF)
* <i>Dalbergia sissoo</i> Roxb. (Aduthurai)	<i>Salix tetrasperma</i> Roxb. (Sirkazhi)
<i>Dichrostachys cinerea</i> W. & A. (Kodiakkarai RF)	<i>Scutia myrtina</i> (Burm. f.) Kurz. (Kodiakkarai RF)



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