

Additions to the Flora of Eastern Ghats, Tamil Nadu, India

R. Kottaimuthu*, **R. Ganesan***, **K. Natarajan**, **J. Brabhu** and **M. Vimala**

*Ashoka Trust for Research in Ecology and the Environment (ATREE), Bangalore

kottaimuthu@yahoo.co.in

Issued 24 May 2008

Abstract

This paper reports eight species of flowering plants, from southern Eastern Ghats of Tamil Nadu, all are new to the flora of Eastern Ghats.

Introduction

During our botanical exploration to the Dindigul Hills of Eastern Ghats, Tamil Nadu, we came across eight plant species, hitherto unreported in any of the previous publications on the flora of Eastern Ghats (Brabhu et al., 2005; Karuppusamy *et al.*, 2001; Mathusuthana, 1992; Muthurakku, 1992; Pallithanam, 2001; Pullaiah & Muraldhara Rao, 2002; Pullaiah *et al.*, 2007; Reddy et al., 2006; Sriganesan, 1984; Subramanyam & Henry, 1959). The present discovery of these species from Dindigul hills of Eastern Ghats is of phytogeographical significance. Hence a brief description, phenological data, notes on distribution and specimens examined are given here for easy identification of the taxa in the field and all the voucher specimens are deposited in the herbaria of Ashoka Trust for Research in Ecology and the Environment (ATREE), Bangalore.

Capparis shevaroyensis *Sund.-Ragh.* in Kew Bull. 37: 72. 1982 & Fl. India 2: 290. 1993. *C. parviflora* Hook. f. Thomson in Fl. Brit. India 1: 176. 1872, non Boiss. 1843; Dunn in Gamble, Fl. Pres. Madras 1: 32. 1957 (repr. ed.). Srinivasan in Nair & Henry, Fl. Tamil Nadu 1: 14. 1983. (Capparaceae).

Straggling shrub, up to 3m high; branchlets ribbed, pubescent when young, later glabrous. Stipular thorns minute or prominent (in old stems), sometimes absent. Leaves alternate, ovate-elliptic or oblong-lanceolate, 5 - 10.5 x 2 - 3.5 cm, base obtuse, margin entire sometimes slightly undulate, apex acuminate with prominent cusp, sometimes obtusely acuminate and retuse, subcoriaceous, glabrous on both surfaces, paler beneath, midrib above sunken in young leaves and slightly raised in mature leaves; lateral nerves 8-14 pairs, impressed beneath; petioles 0.1 - 0.2 cm long. Flowers white, in 5 - 10 flowered subterminal / axillary umbels; peduncles 0.5 - 3 cm long; pedicels 1 - 1.2 cm long, glabrous. Sepals 4, ovate - oblong / obovate, 0.3 - 0.6 x 0.2 - 0.4 cm, concave. Petals 4, white, oblong - elliptic, 0.5 - 0.7 x 0.2 - 0.4 cm, sericeous tomentose on both sides, margin ciliate. Stamens 15 - 25, glabrous; filaments curved, 0.6 - 1 cm long; anthers oblong, 0.1 - 0.2 cm long. Gynophore 0.5 - 1.2 cm, purplish. Ovary ovoid, 0.1 - 0.2 x 0.1 cm; style minute, bristle like; stigma obscure. Fruits globose, 1 - 1.2 cm in diameter; seed solitary, ovoid / globose, 0.6 - 0.8 cm in diameter.

Flowering & Fruiting: July - August.

Distribution: India (Tamil Nadu).

Specimens examined: Specimens examined: Eastern Ghats: Tamil Nadu: Dindigul District, Nerkuthu sholai, Sirumalai, 1120m, 12-7-2007, *R. Kottaimuthu & R. Ganesan 2179*; Along the stream banks of Kannimaruthu odai, 400m, 22-8-2007, *R. Kottaimuthu & M. Vimala 1077* & 3-11-2007, *R. Kottaimuthu & J. Brabhu 1242*.

Cocculus laurifolius DC. Syst. 1: 530. 1817; Hook. f. & Thoms., in Hook. f. Fl. Brit. India 1: 101. 1872; Dunn in Gamble, Fl. Pres. Madras 1: 21. 1957 (repr. ed.) . Chithra in Nair & Henry, Fl. Tamil Nadu 1: 7. 1983. (Menispermaceae).

Small trees, 1.5 – 2.5m tall; branchlets with raised lenticels. Leaves elliptic – lanceolate / obovate, 5 - 7.5 x 2 - 4 cm, entire, 3-ribbed from base, glossy above, paler beneath, apex caudate acuminate, cuneate towards the base; petiole flattened, 0.5 cm long. Fruits globose, 0.6 - 0.8 cm across, juicy, black when ripe.

Fruiting: July.

Distribution: India (Tamil Nadu) & South East Asia

Specimens examined: Eastern Ghats: Tamil Nadu: Dindigul District, Thumbiu sholai, Sirumalai, 1192m, 10-7-2007, *R. Kottaimuthu & R. Ganesan. 5127*.

Croton hirtus L' Herit., Strip. Nov. 1: 17, t. 9. 1785; Amaratunga in Ceylon J. Sci. 12: 189. 1977; Veldkamp in Fl. Males. Bull. 9/4 (40): 415. 1987; Ramachandran *et al.*, in I. Jour. Forestry 183. 1992; Preetha & Binojkumar in J. Econ. Tax. Bot. 294. 2006. (Euphorbiaceae).

Erect herbs, up to 80 cm high; stem terete, dichotomously branched; branchlets clothed with pale strigose – stellate hairs. Leaves alternate, ovate / oblong, 2.5 – 5 x 1.5 – 4 cm, margin serrate, apex acute, obliquely truncate at base; lateral nerves 3- 5, obscure above, distinct below with 2 prominent glandular hairs at base of lamina; petioles 1 – 2 cm long; stipules linear, 0.2 cm long, caduceous. Inflorescence a terminal, branched raceme with copious multibranched glandular hairs with globose tips, female flowers below, male flowers above; male flowers white; pedicels up to 0.5 cm long, stellate hairy; sepals 5, obovate, 0.2 cm long; petals 5, oblanceolate, 0.2 cm long, serrate along margin; stamens 9 – 11; filaments 0.1 cm long, glabrous; anthers oblongoid, pale brown. Female flowers green; pedicels 0.5 – 1.5 cm long; bracts linear, fringed with 2 – 5 stalked capitate glands; sepals 5, unequal, linear – oblong, 0.3 cm long, dentate along margin; ovary ovoid, 0.1 cm across; styles 3, each divided in to two, 0.2 cm long, apex reflexed. Capsules globose, 0.5 cm across, bractetae; seeds 3, trigonous, black.

Flowering & Fruiting: January - May.

Distribution: India (Tamil Nadu & Kerala), Ceylon, West Indies, Central & South America, Tropical Asia & Thailand.

Specimens Examined: Eastern Ghats: Tamil Nadu: Dindigul District, On way to china malaiyur rice field, Karandamalai, 478m, 14-1- 2007, *R. Kottaimuthu & M. Vimala 370*; On way to Mulaiyur, Perumalai, 502m, 3-5-2007, *R. Kottaimuthu & K. Natarajan 3031*; Puliampallam, Sirumalai, 665m, 7-7- 2007, *R. Kottaimuthu & R. Ganesan 2014*.

Notes: Croton hirtus L'Herit is native to West Indies and Central and South America which has become an aggressive weed in Tropical Asia and Africa. In India, it was first reported from Tirunelveli Hills of Western Ghats (Ramachandran *et al.*, 1992). Later it is reported to be common through out the coastal regions of Kerala (Preetha & Binojkumar, 2006).

Lepianthes umbellatum (L.) Raf. Sylva. Tellur. 85. 1838; Matthew, Fl. Palni hills 3: 1053. 1999. (Piperaceae).

Sub shrubs, up to 1m tall; branchlets sub succulent, lepidote. Leaves alternate, cordate-orbicular, 17-36 x 12-30 cm, palmately 10-15 nerved from base, apex rounded to sub acute; petiole 10-20 cm long, sheathing at base. Spikes 1-6, on stout axillary peduncle, 5-12 x 0.3 cm; bracts peltate, densely white ciliate at margins. Stamens 2; anthers 4-lobed. Ovary ellipsoid / obovoid, punctuate; stigmas 3, caducous. Fruits not seen.

Flowering: September.

Distribution: India (Tamil Nadu, Kerala, Karnataka & Maharastra), Ceylon, Africa & South East Asia.

Specimens Examined: Specimens examined: Eastern Ghats: Tamil Nadu: Dindigul District, On way to Kannimaruthu odai, Karandamalai, 318m, 22-9-2007, R. Kottaimuthu & K. Natarajan 2010.

Osbeckia aspera (L.) Blume, Bijdr. Atuurk. Wetensch. 6: 220. 1831, var. **aspera**; Clarke, C. B. Fl. Brit. India 2: 519. 1879; Gamble, Fl. Madras 1: 347. 1957 (repr. ed.). (Melastomataceae).

Under shrubs, up to 1-1.5m tall; branchlets adpressed pubescent. Leaves elliptic, 1.5-4 x 0.5-1.6cm, coriaceous, velvety tomentose, 4-5 ribbed from base, apex acute-mucronate. Flowers pink, in 4-7 flowered terminal cymes; peduncles 0.5-1 cm long. Hypanthium with prominent intersepalar emergences. Petals 5, obovate, 1.5-1.8 x 1.8-2cm. Stamens 10; filaments 0.5-0.6cm long, incurved. Capsule urceolate, 1cm across, many seeded.

Flowering & Fruiting: June – August.

Distribution: India (Tamil Nadu, Kerala, Karnataka) & Ceylon.

Specimens examined: Specimens examined: Eastern Ghats: Tamil Nadu: Dindigul District, Kannadiparai, Sirumalai, 1211m, 15-7-2007, R. Kottaimuthu & R. Ganesan 2080.

Strobilanthes ciliatus Nees in Wall., Pl. Asiat. Rar. 3: 85. 1832 & DC., Prodr. 11: 183. 1847; Clarke in Hook. f. Fl. Brit. India 4: 439. 1884; Gamble, Fl. Pres. Madras 2: 729. 1957 (repr. ed.). *Nilgirianthus ciliatus* (Nees) Bremek. in Verh. Kon. Ned. Akad. Wetensch., Afd. Naturk., Tweede Sect. 41: 270. 1944; Kumari in Henry *et al.*, Fl. Tamil Nadu 2: 154. 1987; Ahmedullah & Nayar End. Pl. Indian region 1: 150. 1986. (Acanthaceae).

Shrub, 1-1.5m tall; stems terete, fimbriate at nodes. Leaves elliptic-lanceolate, 10 - 18 x 3 - 5cm, acute, decurrent at base, margin serrate, acuminate at apex, prominently lineolate above, not so beneath; secondary veins 5-7 pairs, raised above, impressed beneath; petioles 1.5 - 3.8 cm long, some times

obscure due to decurrent lamina. Inflorescence spike, axillary, 2 - 2.5 cm long, glabrous; peduncles 2.3 – 3 cm long, articulate, bracteate below middle; bracts orbicular, 0.5 cm long, obtuse at apex; bracteoles linear-lanceolate, 0.5 cm long, apiculate. Calyx lobes 5, oblanceolate, 0.5 cm long, glabrous. Corolla tubular-campanulate, white with purple blotches, lobes obovate, 0.3 cm long, prominently veined. Stamens 4, didynamous, exerted; filaments arising from top of staminal sheath, longer ones up to 1.5 cm long; anthers purple, 0.2 cm long. Ovary on a disc, 0.3 cm long, glabrous; style slender up to 1.5 cm long. Capsules not seen.

Flowering: March.

Distribution: India (Tamil Nadu, Kerala, Karnataka & Maharastra).

Specimens examined: Specimens examined: Eastern Ghats: Tamil Nadu: Dindigul District, Along the stream banks of Elanikudai aruvi, Karandamalai, 402m, 20-3-2007, *Kottaimuthu 870*; On way to Kallanai valley, Karandamalai, 456m, 10-4-2007, *Kottaimuthu 899*.

Tropidia thwaitesii Hook. f. Fl. Brit. India 6: 93. 1890; Trimen, Handb. Fl. Ceylon 4: 219. 1898; Jayaweera in Dassan & Fosberg. Rev. Handb. Fl. Ceylon 2: 328. fig. 144. 1981; Nageswara Rao in J. Indian bot. Soc. 409. 1989. (Orchidaceae).

Terrestrial herb, 15 – 30 cm high; stem clothed with leaf sheaths except at base. Leaves linear – lanceolate, 6 – 14 x 1 – 2 cm, apex acuminate, 3 – 5 ribbed at base; base sheathing, sheaths up to 2.5 cm long, strongly ribbed. Flowers yellowish-green, in terminal spikes; peduncle 1 – 2.5 cm long with many erect, strongly nerved, subulate sterile bracts. Floral bracts 0.5 – 0.9 x 0.2 – 0.3 cm, 3-nerved, glabrous. Sepals oblong – lanceolate, 0.5 – 0.6 x 0.2 – 0.3 cm, 3-nerved, laterals connate basal half and ensheathing the base of the lip. Petals oblong, subfalcate, 0.4 – 0.5 x 0.2 cm, 3-nerved. Lip ovate – lanceolate, 0.5 – 0.7 x 0.2 – 0.3 cm, sessile at the base of the column, constricted and deflexed at the apical end. Column short, stout, 0.4 – 0.5 cm long, rostellum erect, ovate, bifid, stigma anticous. Anther erect, linear – oblong, 0.2 cm long; pollinia 2, clavate; caudicle short and slender; ovary 0.6 – 0.8 cm long, ribbed, glabrous.

Flowering: November.

Distribution: India (Tamil Nadu) & Ceylon.

Specimens examined: Specimens examined: Eastern Ghats: Tamil Nadu: Dindigul District, Peria aruvi valley, Alagar Hills, 402m, 20-11-2007, *R. Kottaimuthu & K. Natarajan 389*.

Notes: In India, four species of *Tropidia* (*T. angulosa* (Lindl.) Blume, *T. curculigioides* Lindl., *T. pedunculata* Blume & *T. thwaitesii* Hook. f.) are found. Of these only two species are present in Eastern Ghats, viz., *T. angulosa* (Lindl.) Blume & *T. curculigioides* Lindl. (Reddy *et al.*, 2006). *T. thwaitesii* Hook. f. so far recorded only from the Tirunelveli Hills of Western Ghats (Rao, 1989) and Ceylon. Thus the present collection is an extension of distribution further towards the southern parts of Eastern Ghats.

Viscum subracemosum Sanjai *et* Balakrishnan in Rheedea 10: 113. 2000. (Viscaceae).

Monoecious undershrub, up to 1m high, branchlets trichotomously branched, longitudinally grooved. Leaves opposite, elliptic-oblongate / lanceolate, 2.5-6.3 x 1.5-2.8cm, margin wavy, apex rounded, base attenuate, triplinerved, lateral pair converge towards apex. Inflorescence 3-6 flowered subraceme, 3-6cm long; peduncles 1-2.8cm long. Flowers enclosed in cupule; bracts ovate, up to 0.2cm long. Berry smooth, globose, 0.5cm in diameter.

Flowering & Fruiting: January – April.

Distribution: India (Tamil Nadu & Karnataka).

Specimens examined: Specimens examined: Eastern Ghats: Tamil Nadu: Dindigul District, On way to Ayyanar falls, Karandamalai, 400m, 14-1-2007, R. Kottaimuthu & M. Vimala 1878; On way to Kallanai valley, Karandamalai, 456m, 1-4-2007, R. Kottaimuthu & J. Brabhu 1958; On way to Meenmutti aruvi, 680m, 3-5-2007, R. Kottaimuthu & K. Natarajan 333.

Acknowledgement

We thank Dr. G. V. S. Murthy, Joint Director, Botanical Survey of India, Southern Circle, Coimbatore for permission to consult Madras Herbarium (MH).

Bibliography

- Brabhu, J., Kottaimuthu, R. & Vimala, M. 2005. *Riparian Flora of Elanikudai and Peria aruvi Streams, Karandamalai, Dindigul District.*). M. Sc., Dissertation, The American College, Madurai (Unpublished).
- Karuppusamy, S., Rajasekaran, K. M. & Karmegam, S. 2001. Endemic flora of Sirumalai Hills (Eastern Ghats), South India. *J. Econ. Taxon. Bot.* 25(2): 367-373.
- Mathusuthanan, G. 1992. *Flora of Karandamalai Hills (Gamopetalous Dicotyledons).* M. Sc., Dissertation, Thiyagarajar College, Madurai (Unpublished).
- Muthurakku, A. 1992. *Flora of Karandamalai Hills (Polypetalous Dicotyledons).* M. Sc., Dissertation, Thiyagarajar College, Madurai (Unpublished).
- Pallithanam, J. M. 2001. *A pocket Flora of Sirumalai Hills, South India.* The Rapinat Herbarium, St. Joseph's College, Tiruchirapalli: pp. 410.
- Preetha, S. S. & Binojkumar, M. S. 2006. *Croton hirtus* L'Herit. (Euphorbiaceae) – A fast naturalizing exotic weed in Indian Subcontinent. *J. Econ. Taxon. Bot.* 30(2): 294-295.
- Pullaiah, T. & Rao, D. M. 2002. *Flora of Eastern Ghats - Hill Ranges of South East India.* Vol. 1, Regency Publications, New Delhi: pp. 346.
- Pullaiah, T., Ramamurthy, K. S. & Karuppusamy, S. 2007. *Flora of Eastern Ghats - Hill Ranges of South East India.* Vol. 3, Regency Publications, New Delhi: pp. 340.
- Ramachandran, V., Ravikumar, K. & Balasubramanian. 1992. *Croton Hirtus* L'Herit (Euphorbiaceae): A new record for India. *Indian Journal of Forestry* 15(2): 183-185.
- Reddy, C. S., Pattanaik, C, Murthy, M. S. R. & Reddy, K. N. 2006. Floristic census of Orchids of Eastern Ghats, India. *The Botanica* 56: 79-76.
- Sriganesan, T. 1984. *Flora of Alagar Hills* Volumes I & II. Ph. D. Thesis, Madurai Kamaraj University, Madurai (Unpublished).

Subramanyam, K. & Henry, A. N. 1959. A contribution to the flora of Alagar Hills, Karandamalais and surrounding regions in Madurai District Madras State. *J. Indian bot. Soc.* 38: 492-527.