



RESEARCH COMMUNICATION

The genus *Eugenia* L. (Myrtaceae) in India

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ABSTRACT

This paper provides a comprehensive taxonomic account of the genus *Eugenia* L. occurring in India. A total of 25 species and two varieties have been enumerated, of which 21 taxa are endemic to the Western Ghats. *Eugenia macrosepala*, an endemic species of the Western Ghats is reinstated here. Each species is provided with a short description, well known synonyms, types, distribution and phenology. An identification key is also provided.

Introduction

The genus *Eugenia* L., the second largest genus in Myrtaceae family, comprises about 1,100 species (1), which are mainly distributed in Brazil, Africa, South-East Asia and Malaysia (2, 3). Duthie (4) enumerated 131 species for erstwhile British India covering the geographical and political boundaries of India, Pakistan, Afghanistan, Nepal, Tibet, Myanmar, Bangladesh, Malayan peninsula and Sri Lanka. But he has followed a wider generic concept and accommodated *Syzygium* Gaertner in *Eugenia*.

Recent anatomical, palynological and molecular studies found that *Eugenia* and *Syzygium* are in quite different clades in which *Eugenia* was included in the *Myrteae* (usually in the subtribe *Eugeniinae* O. Berg) and *Syzygium* in the new *Syzygieae* clade (5–10). Based on the above concept the Indian *Eugenia* had easily differentiated from *Syzygium* by the young shoots and flowers often pubescent, flowers usually solitary or aggregated in many flowered axillary dichasial or raceme like inflorescences and seeds with fused cotyledons. Whereas in *Syzygium*, the young shoots and flowers are usually glabrous, the inflorescences usually terminal (sometimes rami- or cauliflorous) or paniculate with free cotyledons in the seeds.

After the tremendous contribution by Duthie (4), several state and provincial treatments have been completed in which notable contributions were made

by several workers (11–30). In addition to these, many new taxa were also been published from different parts of the country (31–40). But national wide documentation of Indian *Eugenia* is far from complete. As part of the revisionary study on the genus *Eugenia* of India, the paper presents a synoptic account on Indian *Eugenia* with a brief description, synonyms, herbarium types, distribution, flowering and fruiting, identification key, etc. The present study reports a total of 25 species and two varieties from India and all are represented in the Western Ghats, of which 21 are strict endemics to this region.

Key to the species

1. Young Brachlets glabrous.....2
1. Young Brachlets hairy.....6
2. Leaves cordate at base.....*E. singampattiana*
2. Leaves not cordate at base.....3
3. Leaves broadly elliptic to suborbicular...*E. codyensis*
3. Leaves otherwise.....4
4. Fruits ribbed.....*E. uniflora*
4. Fruits smooth.....5
5. Sepals broadly ovate.....*E. seithurensis*
5. Sepals orbicular.....*E. calcadensis*
6. Sepals ovate or broadly ovate.....7

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6. Sepals not as above.....13
7. Leaves silvery pubescent below.....*E. argentea*
7. Leaves not silvery pubescent below.....8
8. Flowers sessile to subsessile; fruits white, irregularly globose.....*E. memecylifolia*
8. Flowers pedicellate; fruits not as above.....9
9. Leaves spatulate or obovate..... *E. mabaeoides*
9. Leaves neither spatulate nor obovate.....10
10. Bracteoles exceeding calyx lobes in length
..... *E. aloysii*
10. Bracteoles always shorter than calyx lobes.....11
11. Leaves narrowly oblanceolate.....*E. rottleriana*
11. Leaves not as above.....12
12. Flowers c. 2.5 cm across at anthesis; fruits globose
.....*E. megamalayana*
12. Flowers c. 1.2-1.5 cm across at anthesis; fruits subglobose.....*E. roxburghii*
13. Sepals and petals orbicular or sub orbicular.....14
13. Sepals and petals never orbicular or suborbicular
.....17
14. Calyx lobes acute at apex.....
.....*E. terpnophylla* var. *keralensis*
14. Calyx lobes obtuse at apex.....15
15. Pedicels 1.5-2.5 cm long.....*E. indica*
15. Pedicels less than 1 cm long.....16
16. Bracts lanceolate, petals orbicular.....*E. discifera*
16. Bracts oblong, petals obovate.....
.....*E. codyensis* var. *obovata*
17. Leaves obovate-oblanceolate, sepals oblong.....
.....*E. velliangiriana*
17. Leaves and sepals otherwise.....18
18. Sepals deltoid; fruits oblongoid...*E. anamalaiensis*
18. Sepals and fruits not as above.....19
19. Flowers sessile, sepals orbicular...*E. macrosepala*
19. Flowers pedicellate, sepals not orbicular.....20
20. Leaves and fruits densely floccose.....*E. floccosa*
20. Leaves and fruits not floccose.....21
21. Flowers supra-axillary, 2-3 cm across at anthesis
.....*E. shettyana*
21. Flowers not supra-axillary, always less than 2 cm across at anthesis.....22
22. Sepals lanceolate or suborbicular to elliptic-oblong; ovule pendulous.....23
22. Sepals not as above, ovules in axile placentation
.....24
23. Young shoots fulvous tomentose; fruits hairy
.....*E. wynadensis*
23. Young shoots silvery pubescent, fruits glabrous..
..... *E. kalamii*
24. Petals oblong to narrowly elliptic-oblong.....25
24. Petals ovate-orbicular or orbicular.....26
25. Bracteoles lanceolate; sepals deltoid.....
.....*E. terpnophylla*
25. Bracteoles oblong; sepals orbicular-ovate.....
.....*E. mooniana*
26. Young shoots grey pubescent; leaves elliptic-ovate, sepals ovate-orbicular.....*E. agasthiyamalayana*
26. Young shoots tawny silvery pubescent; leaves spatulate, sepals orbicular-ovate.....
.....*E. manickamiana*

Eugenia agasthiyamalayana Gopalan & Murugan, Indian J. Forest.31(4): 641. 2008.

Shrub to small trees, 2-8 m high; branchlets finely grey pubescent. Leaves elliptic-ovate, 2.5-6x 1.5-3 cm, thin coriaceous, attenuate at base, caudate-acuminate at apex; lateral nerves c. 12 pairs; petioles 0.7-1 cm long. Inflorescence supra-axillary or axillary (solitary or paired) or terminal 4-6 flowered racemes; peduncle c. 5 mm long. Bracteoles 2, linear, c. 2x 0.5 mm. Flowers c. 1 cm across; pedicels slender, 5-12 mm long. Calyx tube c. 2 mm long; lobes 4, subequal, ovate to orbicular, 3-4.5x 2-2.5 mm, fulvous pubescent without; petals 4, orbicular, 4-4.5x 3-3.5 mm, white. Fruits globose, c. 2 cm across.

Type: INDIA, Tamil Nadu, Tirunelveli Distr., Agasthiyamalai Hills, Kallar to Sangumuthirai, 23 April 1992, c. 1400 m, *R. Gopalan 99371* (CAL).

Distribution: Tamil Nadu; 1300-1800 m.

Flowering & fruiting: January-October.

Eugenia aloysii C.J.Saldanha, Fl. Karnataka 2: 23. 1996.

Shrubs or small trees; branchlets fulvous tomentose. Leaves elliptic, 3.8 -5.8 x 1.1-2.4 cm, rounded at base, acuminate at apex; petioles short. Flowers solitary or fascicled, axillary; pedicels 2-3 cm long, densely fulvous tomentose; bracteoles 2, linear, fulvous tomentose, exceeding calyx lobes. Calyx lobes 4, ovate, densely fulvous tomentose without; petals 4, white.

Type: INDIA, Karnataka, Hassan distr., near Genkalbetta, 19.12.1969, *Saldanha 15931* (JCB).

Distribution: India (Karnataka); above c.1000 m.

Flowering: December.

Eugenia anamalaiensis E.S.S. Kumar, Veldk. & Shareef, Webbia 69(1): 101. 2014. *Eugenia gracilis* Bedd, Madras J. Lit. Sci. III, 1: 46.1864 & in Trans. Linn.Soc.25: 217. 1865 non *E. gracilis* O.Berg (1856). *Eugenia mooniana* Wight var. *gracilis* (Bedd.) Duthie in Hook. f., Fl. Brit. India 2: 505. 1879. *Eugenia cotinifolia* Jacq. var. *gracilis* (Duthie) M.R. Almeida, Fl. Maharashtra 2: 265. 1988.

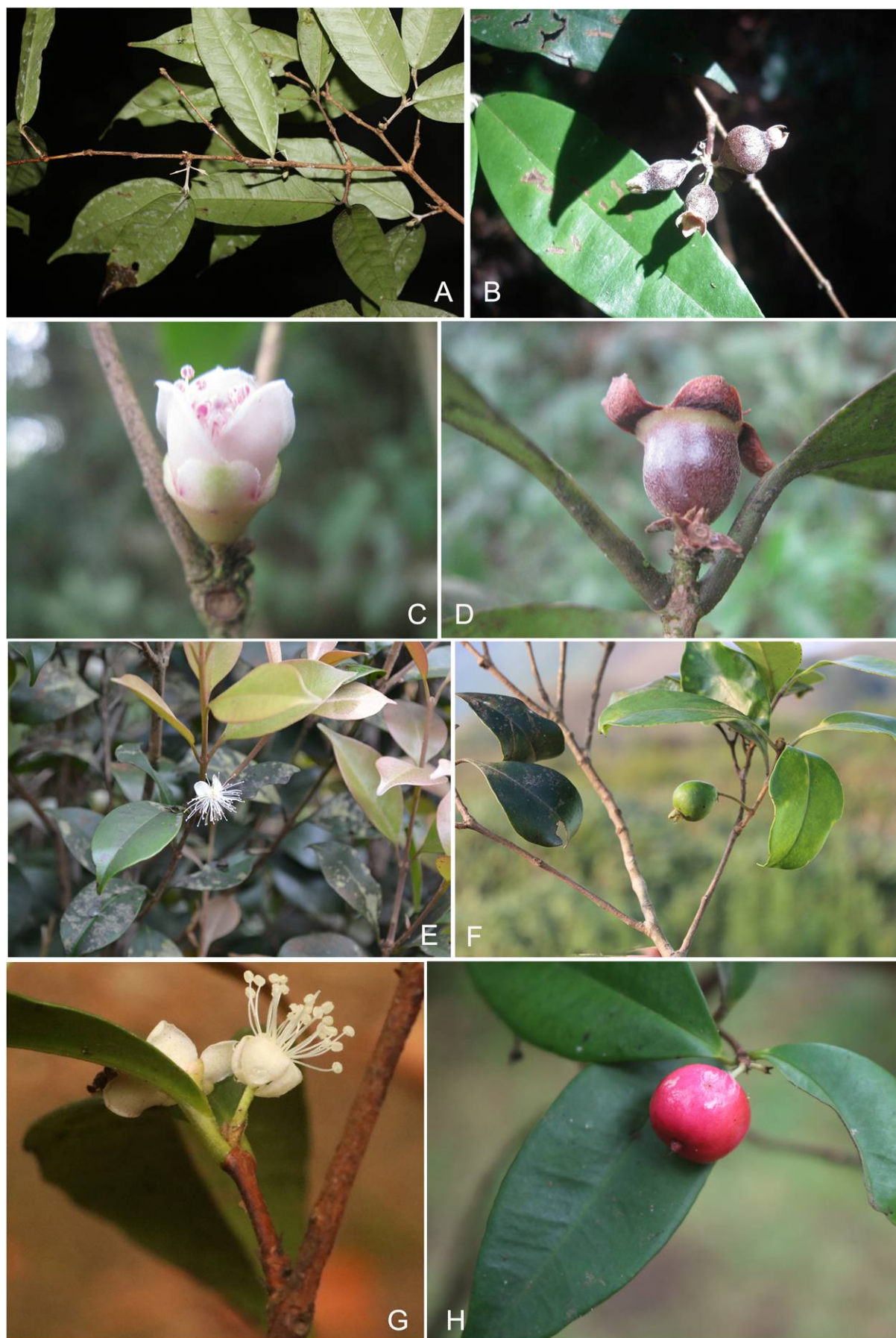


Fig. 1. A-B. *Eugenia argentea*, C-D. *E. codyensis*, E-F. *E. discifera*, G-H. *E. kalamii*.

Large shrubs or small trees, to 6 m; branchlets puberulous. Leaves lanceolate, 7.5–14x 2.3–4.5 cm, attenuate to cuneate at base, acuminate to caudate-acuminate at apex; lateral nerves c. 22 pairs; petiole

0.5–0.8 cm long. Flowers white, axillary, supra-axillary rarely terminal or lateral; solitary or from short peduncles. Bracts 2. Calyx tube campanulate, 2–3.5 mm long; lobes 4, deltoid; petals 4, ovate-

elliptic, white. Fruits oblong, rarely globose, to 2.5 × 1.5 cm, crimson on ripening; seeds 1–2.

Type: INDIA, Kerala, Anamalai Hills, *R.H. Beddome, s.n.* (BM).

Distribution: Maharashtra, Kerala; c.1350 m.

Flowering & Fruiting: February–March (Maharashtra); October–February (Kerala).

Eugenia argentea Bedd., Fl. Sylv. S. India: 109. 1872. (Fig.1. A-B).

Shrub or small trees, to 5 m; branchlets silvery-pubescent. Leaves lanceolate to elliptic-lanceolate, 10–13x 1.5–3 cm, chartaceous, rounded at base, acuminate to caudate-acuminate at apex, silvery-pubescent beneath; lateral nerves 14–17 pairs; petiole 4–6 mm long. Flowers 1–1.2 cm across, creamy-white, solitary or fascicled in the leaf-axils or in very short cymes; pedicels 0.5–1.5 mm long. Bracteoles 2, linear lanceolate or filiform, c. 3.5 mm long, exceeding the calyx lobes. Calyx-tube nearly globose, c. 0.5 cm across; lobes 4 (rarely 5), ovate, pubescent without; petals 4 (rarely 5), suborbicular, 5x 4 mm, white. Fruit depressed- globose or ellipsoid, 2.2x 1 cm, dark yellow or brownish yellow, shortly appressed-pubescent; seeds 1–4.

Type [Lectotype designated by Kumar *et al.* (41)]: INDIA, Kerala, Wayanadu ('Wynad') dist., Thamarassery Ghats ('Thambracherry Ghat'), *Col. R.H. Beddome, s.n.* (K) (Barcode K000518029).

Distribution: INDIA (Tamil Nadu & Kerala), Endemic; 800–1500 m.

Flowering & Fruiting: Throughout (Tamil Nadu & Kerala).

Eugenia calcadensis Bedd., Fl. Sylv. S. India: 110. 1872.

Small trees, to 10 m high; young branchlets rusty pubescent. Leaves obovate-oblong, rarely elliptic, 3.5–10x 1–4 cm, coriaceous, cuneate or attenuate at base, obtuse at apex; lateral nerves 6–10 pairs; petiole 0.8–1.2 cm long. Flowers c. 3 cm across, white, in axillary pairs or rarely solitary on short peduncle; pedicel 2–3 cm long. Bract linear-subulate, c. 5 mm long; bracteoles 2, c. 2 mm long. Calyx tube cup shaped, 3–5x 4–7 mm, greenish-white; lobes 4, orbicular, 4–6 mm diam, appressedly brown wooly tomentose without; petals 4, oblong, 1.2–1.8x 0.8–1.4 cm. Fruit ellipsoid or globose, 0.8–1.5x 0.7–1 cm, fulvous tomentose; seeds 1–2.

Type [Lectotype designated by Byng *et al.* (42)]: INDIA, Tamil Nadu, Calcad hills, South Tinnevely, 2000ft., *Beddome 2923* (BM) (Barcode BM0000944119).

Distribution: Tamil Nadu, Kerala; 200–1100 m.

Flowering & Fruiting: June–November (Tamil Nadu); April–May (Kerala).

Eugenia codyensis Munro ex Wight, Ill. Ind. Bot. 2: 13. 1841. *Eugenia cotinifolia* subsp. *codyensis* (Munro

ex Wight) P.S.Ashton in Revis. Handb. Fl. Ceylon 2: 412. 1981. *Eugenia hypoleuca* Thwaites ex Kosterm. in Quart. J. Taiwan Mus. 34: 164. 1981. *Syzygium codyensis* (Munro ex Wight) Chandrab. in Biol. Mem. A2: 57. 1977. (Fig. 1. C-D).

Small trees, to 6 m high; branchlets glabrous. Leaves broadly elliptic to suborbicular, 3–9x 2–4.5 cm, thickly coriaceous, broadly cuneate at base, retuse, obtuse, or subacute at apex; lateral nerves 10–12 pairs; petiole 5–10 mm long. Flowers white to pale yellow, 2 cm across, axillary solitary, rarely in fascicles, or rarely in terminal heads at end of abortive branchlets; pedicels 3.5 cm long. Bracteoles 2, ovate, white tomentose. Calyx tube shallowly cup-shaped, 8 × 7 mm, white pubescent; lobes 4, orbicular. Petals white, elliptic-spathulate, to 15 × 10 mm. Fruit globose, 2.5 cm diam., ripening green flushed with crimson; seeds 1–2.

Type: INDIA, Karnataka, Coorg, near Mercara, *Wight s.n.* (K) (Barcode K000821511).

Distribution: India (Karnataka, Kerala, Maharashtra & Tamil Nadu), Sri Lanka, Mauritius; above 900 m.

Flowering & Fruiting: March–May (Maharashtra); March–April (Karnataka); August–September (Tamil Nadu); January–August (Kerala).

Eugenia codyensis var. ***obovata*** Rijuraj, Rajendraprasad, Shareef & Shaju, Ann. Plant Sci. 9(3): 3750. 2020.

Bushy shrub or small trees, to 3 m high; bark grayish-white, rough; branchlets terete, younger shoots sparsely pubescent, glabrous when mature. Leaves narrowly elliptic to elliptic-oblong, 7–9x 2.5–3.5 cm, thinly coriaceous, punctate on both surfaces, attenuate at base and narrowly acuminate at apex, margin slightly revolute, nerves 10–14 pairs, petioles 0.8–1 cm long. Flowers creamy-white, c. 1.2 cm, usually 3–5 and rarely solitary, axillary and terminal, sessile or subsessile, pedicels to 0.5 cm long, golden pubescent; bracts 2, oblong, c.1.5x 0.5mm, obtuse at apex, ciliate at the margin; bracteoles 2, ovate-deltoid, 1.5x 2mm, pubescent. Sepals 4, glandulate; lobes orbicular, rounded at apex, margin sparsely ciliate, persistent. Petals 4, obovate, 5x 3 mm, free, creamy-white, pubescent along margins, glandulate, reflexed, caducous after anthesis. Fruit depressed globose, c. 0.8–0.9x 0.9–1.2 cm, green, pubescent at base and apex, sparsely at the center, crowned with persistent calyx lobes. Seeds 2, rarely solitary, planoconvex.

Type: INDIA, Kerala, Kasaragod district, Ananthapura, ± 103m, January 2019. *Shaju & Rijuraj 93849* (TBGT).

Distribution: Kerala.

Flowering & Fruiting: January–February.

Eugenia discifera Gamble, Bull. Misc. Inform. Kew 1918 (7): 239. 1918. (Fig. 1. E-F).

Small trees, to 5 m high; young branchlets rusty pubescent. Leaves elliptic-ovate or obovate, 3–5x 1.5–3 cm, coriaceous, attenuate at base, obtuse or

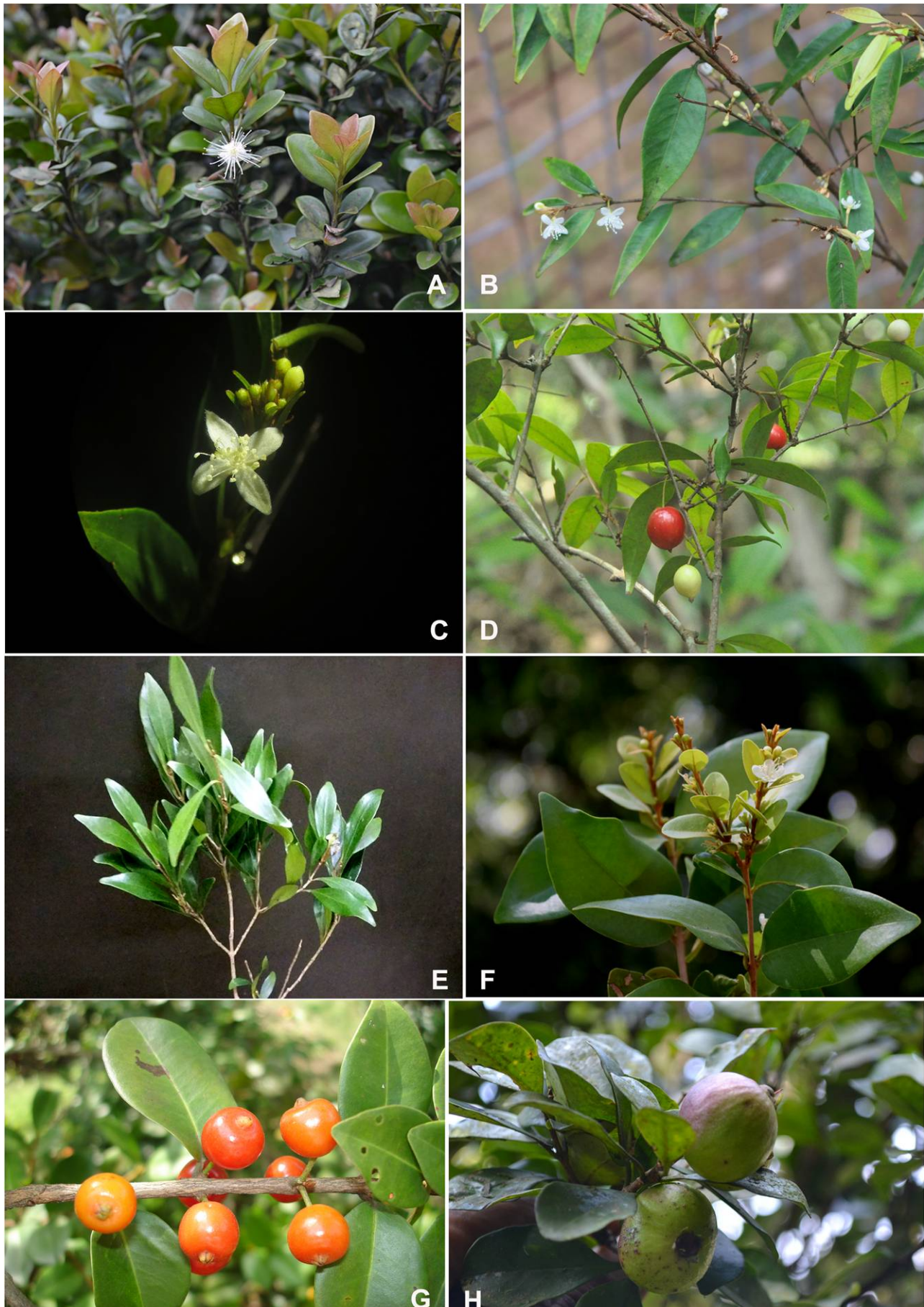


Fig. 2. A. *Eugenia mabaeoides*, B-D. *E. mooniana*, E. *E. rottleriana*, F - G. *E. roxburghii*, H. *E. seithurensis*.

obtusely acute at apex; lateral nerves 10-11 pairs; petiole 0.6-1 cm long. Flowers 2 cm across, white, axillary or lateral, solitary 2-3 fascicled; peduncle to

2 cm long; pedicels 0.5-0.9 cm long, fulvous tomentose. Bracts small linear, rusty villous; bracteoles 2, lanceolate, c. 2 x 0.5 mm, appressedly

silky pubescent without. Calyx tube campanulate, 2–3 mm long; lobes 4, orbicular, 4–5 mm, tomentose without; petals orbicular, 8–10 mm, pinkish-white. Fruit globose or ellipsoid, 2–2.5 × 1.7–2.2 cm, greenish-yellow, glabrous; seeds 1–2.

Type [Lectotype designated by Byng *et al.* (42)]: INDIA, Kerala, Travancore, near Chemunji, 1300 m, April 1895, *Bourdillon 580* (K) (Barcode K000821387)

Distribution: Tamil Nadu, Kerala; 750–1700 m.

Flowering & Fruiting: September–February (Tamil Nadu); January–August (Kerala).

Eugenia floccosa Bedd., Fl. Sylv. S. India 1: t. 200. 1872.

Small trees, to 7 m high; young branchlets densely tawny-fulvous tomentose. Leaves broadly elliptic, 7.2–10.5 × 3.2–6 cm, thick coriaceous, cuneate-attenuate at base, shortly acuminate with blunt tip to obtuse at apex, floccose beneath throughout when young or at least near base and on midrib when mature; lateral nerves, c. 12 pairs; petiole 1.5–2 cm long. Flowers large, c. 2.5 cm diam., white, solitary or in short few flowered terminal or axillary cymes to 2 cm long; pedicels 0.5–1.5 cm long. Bracts elliptic, 5–10 × 5 mm, brown tomentose without; bracteole 2, large, obovate, c. 14 × 11 mm, brown woolly tomentose on either sides. Calyx tube broadly campanulate, to 10 mm long; lobes 4, broadly semi-lunar to ovate-orbicular, c. 8 mm, brown woolly on both side; petals 5, white, oblong, 5–8 × 4 mm. Fruit globose or ellipsoid-pyriform, 2–4 × 2–3.4 cm, densely tomentose; seeds 2.

Type: INDIA, Tamil Nadu, Tinnevely Ghats, above Calcad, 3000–4000 ft., *R. Brown 199* (K) (Barcode K000821510).

Distribution: Tamil Nadu, Kerala, 1000–1500 m.

Flowering & Fruiting: September–November (Tamil Nadu); June–September (Kerala).

Eugenia indica (Wight) Chithra, Fl. Tamil Nadu 1: 153. 1983. *Jossinia indica* Wight, Icon. Pl. Ind. Orient. 2: t. 523. 1842. *Eugenia jossinia* Duthie, Hook. f., Fl. Brit. India 2: 500. 1879.

Large shrub to small trees, 5–7 m; branchlets densely rusty tomentose. Leaves elliptic-obovate or oblanceolate, 3–7 × 1.5–3 cm, thin coriaceous, acute or attenuate at base, obtuse at apex; lateral nerves 5–6 pairs; petiole 3–8 mm long, densely rusty tomentose. Flowers c. 1 cm across, axillary, solitary or paired, usually crowded at the end of branchlets; pedicels 1.5–2.5 cm long, densely rusty tomentose. Bracteoles 2, linear, c. 3 mm long. Calyx tube campanulate, 4–6 mm long; lobes 4, orbicular, equal, 5 mm across, fulvous tomentose; petals white, orbicular, 7–10 mm across, hairy. Fruit globose, 1–1.5 cm across, densely rusty tomentose; seeds few to many.

Type [Lectotype designated by Byng *et al.* (42)]: INDIA, Tamil Nadu, Shevagherry hills, near Courtallum, *R. Wight, s.n.* (K) (Barcode K000821508)

Distribution: Tamil Nadu, Kerala; 400–1200 m.

Flowering & Fruiting: March–August.

Eugenia kalamii Shareef, E.S.S.Kumar, Shaju & Prakashk, Pl. Sci. Today 5(4): 196. 2018. (Fig. 1. G–H).

Under-shrubs, to 1 m high; young shoots silvery pubescent. Leaves ovate-lanceolate, 2.5–9 × 2.5–3.5 cm, subcoriaceous, acute at base, narrowly acuminate at apex; lateral nerves 10–14 pairs; petioles 1.5–4 mm long. Flowers white, c. 1 cm across, solitary or paired, rarely 3-together, terminal, axillary or rarely lateral on a 3 mm long silvery pubescent peduncles; pedicels 1.5–6 mm long, silvery pubescent. Bracts 2, linear lanceolate, c.1.5 × 0.7–1 mm long; bracteoles 2, ovate-deltoid, 0.8–1 × 1 mm, silvery pubescent. Calyx cup-shaped, to 2 × 2 mm; lobes 4, unequal, sub orbicular to elliptic-oblong, c.1.5 × 1.2 mm; petals 4, ovate-elliptic, 3.8–4.6 × 3 mm, white. Fruit succulent, depressed-globose, ellipsoid or rarely obovoid 11–14 × 13–15 mm, smooth, crimson on ripening; seed 1.

Type: INDIA, Kerala, Wayanad Distr., Periya, 840 m, 20.07.2016, *S.M.Shareef 92402* (TBGT)

Distribution: Kerala.

Flowering & Fruiting: July–September.

Eugenia mabaeoides Wight, Ill. Ind. Bot. 2: 13 1841. (Fig. 2. A).

Much branched shrub, 2–5 m high; young branchlets fugacious pubescent. Leaves spatulate to elliptic or obovate, 1.5–4 × 0.5–2.5 cm, coriaceous, narrowly attenuate at base, obtuse or rounded at apex; lateral nerves c.5–10 pairs; petiole 3–6 mm long. Flowers small, greenish-white with rosy tinge, 1–3, axillary; pedicels slender, 0.8–1 cm long, glabrous or slightly pubescent. Bracts 2, subulate, 1.5 mm long, fulvous tomentose. Bracteoles 2, linear, c.1.5 mm long, fulvous-tomentose. Calyx tube shallowly cup-shaped, 0.25–0.3 cm long; lobes 4, broadly ovate, 0.28–0.4 cm long, glabrous or slightly pubescent without; Petals 4, ovate-lanceolate, 0.5–0.6 × 0.25–0.3 cm, white. Fruit subglobose or ovoid, 0.5–0.6 × 0.25–0.35 cm, crimson or greenish purple.

Type [Lectotype designated by Byng *et al.* (42)]: SRI LANKA, Herb. *Wight, s.n.* (K) (Barcode K000821533)

Distribution: India (Tamil Nadu, Kerala), Sri Lanka; c.1500–1700 m.

Flowering & Fruiting: March (Tamil Nadu); February–June (Kerala).

Note: Manickam *et al.* (28) reported *Eugenia mabaeoides* subsp. *pedunculata* (Trimen) P.S.Ashton from Tirunelveli hills as a new distributional record for India. Perusal of protologue and type specimen (Sri Lanka: Rangala range, September 1888, *Trimen, s.n.*, K001000176-image!) provided by Trimén (46) is compared with the description and figure provided by Manickam *et al.* (28) showed remarkable differences. Hence the occurrence of *E. mabaeoides* subsp. *pedunculata* for India by Manickam *et al.* is a



Fig. 3. A-B. *Eugenia shettyana*, C-D. *E. terpnophylla* var. *keralensis*, E. *E. uniflora*, F. *E. wynadensis*.

misidentification of a taxon, probably similar to *E. manickamiana* Murugan, pending further studies.

Eugenia macrosepala Duthie in Hook.f., Fl. Brit. India 2: 501. 1879.

Large shrubs to small trees, to 5 m; branchlets pubescent; young flush reddish. Leaves elliptic to elliptic-oblong or oblong-lanceolate, 7-14.5 x 2.7-5.5 cm, chartaceous, acute at base, obtusely acuminate at apex; lateral nerves 10-15 pairs; petiole 0.5- 0.8 cm long, pubescent when young. Flowers white, sessile, axillary or lateral from the leafless axils, solitary or in pairs. Bracteoles 2, linear, pilose, exceeding the calyx lobes. Calyx tube 6 mm long, clothed with long spreading white hairs without; lobes 4, narrowly lanceolate, ciliate, exceeding the petals; petals white,

ovate-oblong, obtuse, ciliate. Fruit irregularly globose, 2.8 cm in diam., pubescent, deep orange when ripe; seeds 2-3.

Type: INDIA, Karnataka, N. Canara, J.E. Stocks, s.n., (K) (Barcode K000821512)

Distribution: Maharashtra, Goa, Karnataka; c.1000 m.

Flowering & Fruiting: February-April (Maharashtra); January-April (Karnataka); January-August (Goa).

Note: Govaerts *et al.* (44) and POWO (45) treated *Eugenia macrosepala* Duthie as the synonym of *Eugenia roxburghii* DC., however, the former is very distinct by the large, 7-14.5 x 2.7-5.5 cm, chartaceous leaves, (vs medium sized, 4-7 x 1-3 cm, coriaceous leaves); sessile flowers (vs pedicellate flowers; pedicel to 1.5 cm long), bracteoles exceeding calyx lobes (vs bracteoles not exceeding calyx lobes), narrowly

lanceolate calyx lobes exceeding the petals (vs ovate calyx lobes, not exceeding the petals), ovate-oblong petals (vs elliptic petals) and narrowly lanceolate calyx lobes exceeding petals (vs ovate calyx lobes not exceeding petals), fruit irregularly globose, c. 2.8 cm diam., (vs subglobose, to 1.3x 1 cm diam.), seeds 1-2 (vs seeds 2-3) and hence it is reinstated as a distinct species here.

Eugenia manickamiana Murugan J. Econ. Taxon. Bot. 26(2): 414. 2002.

Small tree, to 4 m high; branchlets tawny-silvery pubescent. Leaves spatulate, 4-7x 1-3 cm, coriaceous, cuneate at base, broadly acuminate at apex; lateral nerves c. 8-15 pairs; petioles to 5 mm long. Inflorescence axillary or occasionally subterminal clusters; peduncle 1-2 mm long. Flowers white, 1-1.5 cm across, solitary or rarely 3; pedicels 5-15 mm long. Bracteoles 1-2, linear-lanceolate, c. 1 mm long, pubescent. Calyx lobes 4, subequal, orbicular-ovate or concave, 2-3 mm across, puberulent without; petals 4, ovate-orbicular or concave, c. 7 × 6 mm, white.

Type: INDIA, Tamil Nadu, Tirunelveli Distr., Courtallum Hills, way to Attaikkadu from Therkkumalai Estate, 31 May 2001, *Murugan 20932* (XCH).

Distribution: Tamil Nadu; 1200-1500 m.

Flowering: May-June.

Eugenia megamalayana Murugan & Arum. in *Taiwania* 64(1): 23. 2019.

Trees, to 25 m; branchlets fulvous tomentose. Leaves ovate-oblong, 7-12.5x 3.5- 4.5 cm, chartaceous, rounded at base, acuminate at apex, fulvous tomentose when young; lateral nerves 8-12 pairs; petioles 1-1.2 cm long. Flowers c. 2.5 cm diam, white, solitary, axillary or rarely 3-flowered terminal racemes, to 2 cm long; peduncle 1-1.5 cm long. Bract and bracteoles linear, 4-7 mm long, fulvous tomentose. Calyx tube obconic; lobes 4, subequal, ovate, 0.5-0.7 mm diam.; petals 4, orbicular, c. 1.2 cm diam. Drupes globose, c. 1.5 cm diam, fulvous tomentose; seeds 1 or 2.

Type: INDIA, Tamil Nadu, Theni Distr., Megamalai Wildlife Sanctuary, Vellimalai West Beat, on the way to Amman Estate, 17.07. 2017, 1422 m, *C. Murugan & S. Arumugam 134871* (CAL)

Distribution: Tamil Nadu; 1100-1500 m.

Flowering & Fruiting: June-February.

Eugenia memecylifolia Talbot, J. Bombay Nat. Hist. Soc. 11: 236. 1897.

Large shrub or small tree. Leaves ovate, 3.8-5.8 × 2.5-3.8 cm, coriaceous, rounded at base, bluntly acuminate at apex; petiole 0.6-1 cm long. Flowers white, 1.2 cm across, sessile or subsessile, solitary or 2- many, fascicled in the leaf axils. Bracts 2, broadly ovate. Calyx lobes 4, ovate, tomentose without; petals

4, spreading. Fruit white, succulent, irregularly globose, 1.9-2.5 cm diam; seeds 1-2.

Type: INDIA, Karnataka, north Kanara, 3400 ft. (c. 1036 m.), 05 May 1894, *Talbot 3127* (BSI)

Distribution: Karnataka

Flowering & Fruiting: March-May.

Eugenia mooniana Wight, Ill. Ind. Bot. 2: 13. 1841. *Eugenia thwaitesii* Duthie, Fl. Brit. India 2: 506. 1879. *Eugenia mooniana* Gardner, London J. Bot. 2: 352. 1843. non Wight 1841; *Eugenia neomooniana* Sobral, *Napaea* 11: 36. 1995. (Fig. 2. B-D).

Shrub to small trees, 5 m; branchlets puberulent. Leaves ovate-lanceolate to narrowly or broadly elliptic, very variable in size and shapes, 3-6 × 1.7-3.5 cm, chartaceous, narrowly or broadly cuneate, shortly or to 2.5 cm long, attenuate acuminate at apex; lateral nerves c. 8-10 pairs; petiole 3-7 mm long. Flowers white, c. 1.5 cm across, solitary or paired or in lax terminal or axillary clusters; pedicels 1-2.5 cm long, very slender. Bracts 2, subulate, minute; bracteoles oblong, c. 2 mm long, fulvous tomentose. Calyx tube cup shaped, 2 × 2 mm; lobes 4, oblong, 3-4 mm, slightly pubescent without; petals 4, elliptic-ovate, 5-10 × 2-5 mm, white. Fruit depressed-globose to ovoid, 1.3-1.5 cm diam, sparsely fulvous tomentose, crimson; seeds 1-2.

Type [Lectotype designated by Kumar *et al.* (38)]: INDIA, Tamil Nadu, Courtallum, Shevagherry hills, August 1836. *Wight KD 1851* (K) (Barcode K000821519)

Distribution: India (Maharashtra, Karnataka, Tamil Nadu, Kerala), Sri Lanka; 0-1800 m.

Flowering & Fruiting: October-February (Maharashtra); February-April (Karnataka); June-December (Tamil Nadu); October-July (Kerala).

Eugenia rottleriana Wight & Arn., Prodr. Fl. Ind. Orient.: 331. 1834. (Fig. 2. E).

Much branched small trees, to 4 m high; branchlets tawny-fulvous tomentose. Leaves narrowly-oblong, 3-7x 0.8-1.6 cm, coriaceous, attenuate at base, obtusely acuminate at apex; lateral nerves 5-8 pairs; petioles c. 5 mm long. Inflorescence axillary fascicled cymes or rarely solitary; peduncle to 5 mm long. Flowers white, c. 1 cm across; pedicels 1-2 cm long. Bract subulate, c. 1 mm long; bracteole linear, c. 2 mm long, pubescent. Calyx tube truncate, c. 2x 2 mm; lobes subequal, ovate, c. 2 mm long, fulvous tomentose; petals 4 or 5, white, elliptic-ovate, c. 4-5x 2-3 mm. Fruits globose, c. 1 cm across, yellowish-green, rusty tomentose; seeds 1-2.

Type: INDIA, Peninsular India, *R. wight 1075* (K) (Barcode K000821518)

Distribution: Tamil Nadu, Kerala; 400-1300 m.

Flowering & Fruiting: March-September (Tamil Nadu); January-April (Kerala).

Eugenia roxburghii DC., Prodr. 3: 271. 1828. *Eugenia bracteata* (Willd.) Raeusch. ex DC., Prodr. 3: 264. 1828. *Eugenia bracteata* var. *fasciculata* (Wall. ex Blume) Duthie, Fl. Brit. India 2: 502. 1879. *Eugenia bracteata* var. *roxburghii* (DC.) Duthie, Fl. Brit. India 2: 502. 1879. *Eugenia fasciculata* Wall. ex Blume, Mus. Bot. 1: 87. 1850. *Eugenia heynei* Rathakr. & N.C.Nair, J. Econ. Taxon. Bot. 5: 232. 1984. *Eugenia rothii* Panigrahi in J. Econ. Taxon. Bot. 5: 994. 1984. *Eugenia rothii* var. *fasciculata* (Duthie) H.B.Naithani, Fl. Pl. India, Nepal & Bhutan: 165. 1990; *Eugenia willdenowii* Wight, Ill. Ind. Bot. 2: 13. 1841. *Eugenia zeylanica* Roxb., Fl. Ind. ed.1832 2: 490. 1832. *Myrtus bracteata* Willd., Sp. Pl. 2: 969. 1799. *Myrtus coromandelina* J.König ex Roxb., Fl. Ind. ed.1832 2: 491. 1832. *Myrtus heynei* Spreng., Syst. Veg. 2: 482. 1825. *Myrtus latifolia* B.Heyne ex Roth, Nov. Pl. Sp. 232. 1821. *Myrtus littoralis* Roxb. ex Wight & Arn., Prodr. Fl. Ind. Orient. 331. 1834. *Myrtus quadripartita* Royen ex Blume, Mus. Bot. 1: 87. 1850. *Myrtus ruscifolia* Willd., Sp. Pl. 2: 970. 1799. *Syzygium bracteatum* (Willd.) Raizada, Indian Forester 74: 336. 1948. *Syzygium latifolium* Blanco, Fl. Filip., ed. 2: 294. 1845. *Syzygium ruscifolium* (Willd.) Santapau & Wagh, Bull. Bot. Surv. India 5: 109. 1964. (Fig. 2. F-G).

Much branched Shrubs or small trees, to 3 m high; branchlets tawny-pubescent. Leaves elliptic or lanceolate, 4–7x 1–3 cm, coriaceous acute at base, obtusely acuminate to caudate acuminate at apex; lateral nerves c. 10 pairs; petiole 6–9 mm long. Inflorescence axillary, 2–3 together or fascicled cymes or rarely solitary. Flowers white, c. 1.2 cm across; pedicels 0.6–1.5 cm long, tawny pubescent. Bracteoles 2, linear, 2.5 mm long. Calyx cup campanulate, 2.3–3 mm; lobes 4, ovate, c. 4x 3 mm; petals white, elliptic, c. 6x 4 mm. Fruits subglobose, to 1.3x 1 cm diam., green turn yellowish to orange or crimson, glabrous; seed 1–2.

Type: BANGLADESH, Sylhet, Roxburgh in Herb. Lambert in Herb. DC. (G; microfiche IDC), see also *Wallich* 3621-A (K; IDC microfiche 7394) and *Roxburgh s.n.*, Icon Ined. 2502 (CAL, K)

Distribution: India (Assam, Meghalaya, West Bengal, Maharashtra, Goa, Karnataka, Tamil Nadu, Kerala), Sri Lanka, Bangladesh, Myanmar, Thailand, S. Vietnam; 100–900 m.

Flowering & Fruiting: April–August (West Bengal); April–July (Maharashtra); April–August (Tamil Nadu); March–May (Kerala).

Eugenia seithurensis Gopalan & S.R.Sriniv., J. Bombay Nat. Hist. Soc. 100: 78. 2003. (Fig. 2. H).

Trees, to 10 m high; branchlets glabrous. Leaves obovate, 3.2–5.4 x 2.9–3.5 cm, coriaceous, attenuate at base, abruptly acuminate at apex; petioles 3–7 mm long. Flowers axillary (solitary or in pairs) or in terminal 4–8 flowered umbels or cymes; pedicels 4–8 mm long. Bract 1, linear lanceolate or lanceolate-elliptic, c. 5 mm long. Bracteoles 2, linear-lanceolate, c. 3 mm long. Calyx tube campanulate, 2–3 mm long; lobes 4, subequal, broadly ovate, 2.5–3.5 x 3–4 mm, sparsely hairy; petals 4, obovate or elliptic-oblong, c.

11 x 7 mm. Fruit globose or subglobose, 1.7–3 cm across, greenish-yellow to pink; seeds 1–3.

Type: INDIA, Tamil Nadu, Virudhunagar Distr., Seithur Hills, between Deviar Estate and forest border of Kerala, 12 June 1979, c. 1350 m, S.R.Srinivasan 63532 (CAL).

Distribution: Tamil Nadu, Kerala; 1250–1580 m.

Flowering & Fruiting: April–October (Tamil Nadu); May–January (Kerala).

Eugenia shettyana Murugan & Gopalan, Nordic J. Bot. 23(5): 625. 2005. (Fig. 3. A-B).

Shrub to small trees, 4 m high; branchlets fulvous pubescent. Leaves elliptic-oblong, 3–7x 1.5–3 cm, chartaceous, rounded at base, abruptly acuminate at apex; lateral nerves 10–15 pairs; petioles to 5 mm long. Flowers white, 2–3 cm across, supraaxillary, opposite; pedicels to 3.5 cm long. Bracteoles linear, c. 5 mm long. Calyx lobes subequal, 4–6 mm across, fulvous pubescent without; petals 4, white, elliptic-oblong, c. 12x 8 mm. Fruit globose, c. 1–2 cm across, fulvous pubescent; seeds 1–4.

Type: INDIA, Kerala, Idukki distr., Vaguvarai Shola (Top station), 1800–2000 m., 12 December 2003, C.Murugan 117638 (CAL)

Distribution: Tamil Nadu, Kerala; 1800–2150 m.

Flowering & Fruiting: November–April.

Eugenia singampattiana Bedd., Icon. Pl. Ind. Or.: 65. 1874.

Small trees, to 5 m high; branchlets glabrous. Leaves ovate or elliptic-oblong, 5–12x 2.5–9 cm, chartaceous, cordate or rounded at base, obtuse or acuminate at apex; lateral nerves 8–10 pairs; petiole 3–10 mm long. Cymes terminal short racemes, to 2 cm long. Flowers white, c. 2.5 mm across; pedicels to 1 cm long. Bracts 2, linear-truncate; bracteoles elliptic-lanceolate, 0.8–1 cm long. Calyx tube 3mm long; lobes 4, ovate-orbicular, 4 mm, slightly pubescent without; petals 4, white, orbicular-ovate, 12x 8 mm long. Fruits globose, 2–3 cm across, yellowish-orange to crimson red; seeds 1–4.

Type [Lectotype designated by Byng *et al.* (42)]: INDIA, Tamil Nadu, Tinnevely Hills, R.H. Beddome 2958 (BM) (Barcode BM000944115)

Distribution: Tamil Nadu, Kerala; 300–600 m.

Flowering & Fruiting: February–August (Tamil Nadu); October–December (Kerala).

Eugenia terpnophylla Thwaites, Enum. Pl. Zeyl.: 114. 1859. (Fig. 3. C-D).

Medium tree, 2 m high; branchlets fulvous pubescent. Leaves elliptic-lanceolate, 6–11x 1.5–4.8 cm, thinly chartaceous, cuneate at base, acuminate at apex, to 2 cm long acumen; lateral nerves 6–10 pairs; petiole to 10 mm long. Flowers white on short bracteate peduncles in axillary clusters; peduncle to 0.5 mm

long; pedicel slender, to 5 mm long. Bracts and bracteoles linear, 1.5–2 mm long. Calyx campanulate, to 3x 2 mm; lobes 4, deltoid, acute at apex, 3x 2 mm; petals 4, narrowly elliptic-oblong, 4x 2 mm. Fruit globose, to 9 mm across; seeds 1–4.

Type: SRI LANKA, Kandy distr., Ambagamuwa, s.coll. 1860, *Thwaites, G.H.K. CP2623* (BR) (Barcode BR0000005230167)

Distribution: India (Kerala), Sri Lanka; 20–1000 m.

Flowering & Fruiting: March–October.

Eugenia terpnophylla* var. *keralensis Shareef, E.S.S.Kumar & P.E.Roy, *Nordic J. Bot.* 29: 455. 2011. (Fig. 3. C-D).

Shrubs to small trees, to 6 m; branchlets densely covered with golden brown hairs. Leaves narrowly or broadly elliptic, 6.5–14x 2.4–4.5 cm, thinly coriaceous, acute or obtuse at base, obtusely caudate-acuminate at apex; lateral nerves 14–16 pairs; petioles 5–8 mm long. Flowers 1 cm across, white, 2–12 aggregated in axillary, terminal or lateral clusters or rarely on peduncle, to 1 cm long; pedicels to 3 mm long, pubescent. Bracts and bracteoles lanceolate, to 2 mm long. Calyx tube campanulate, to 4x 3 mm, pubescent; lobes 4, suborbicular, c. 2x 1.7 mm, pubescent; petals 4, suborbicular, 5x 4.5 mm, white. Fruit ellipsoid, c. 2.2x 1.9 cm; seed 1, rarely 2.

Type: INDIA, Kerala, Pathanamthitta distr., Moozhiyar, 1100 m., 18 March 2010, *S. M. Shareef & P. E. Roy 69332* (TBGT)

Distribution: Kerala.

Flowering & Fruiting: February–April.

***Eugenia uniflora* L., Sp. Pl.** 470. 1753. *Eugenia uniflora* var. *atropurpurea* Mattos, *Loefgrenia* 85: 2. 1984. *E. subcordata* Wight & Arn., *Prodr. Fl. Ind. Orient.* 331. 1834. (Fig. 3. E).

Shrub to small trees, to 8 m; branchlets glabrous. Leaves ovate or oblong-elliptic, 3.6–5x 1.3–3 cm, chartaceous, acute or obtuse at base, acute at apex; lateral nerves 5–6 pairs; petiole 2–3 mm long. Flowers white, –3, axillary; peduncle to 2 cm long. Bracts 3–5 mm long; bracteoles linear, 1–2 mm long. Calyx tube funnel shaped, 2x 2 mm; lobes 4, oblong to deltoid, to 4 mm; petals 4, orbicular to obovate, 7–8 mm, white. Fruits globose, 1.5x 1.5–3 cm, prominently ribbed, succulent, green turns yellowish to crimson; seeds 1 or 2.

Type [Lectotype designated by McVaugh (43)]: SRI LANKA, Micheli, *Nov. Pl. Gen. t.* 108. 1729.

Distribution: Native to Brazil, Cultivated in India; 100–600 m.

Flowering & Fruiting: September–November.

Eugenia velliangiriana Murug., V.Ravich., Murugan & Arum., *Webbia* 74(1): 23. 2019.

Medium-sized or large trees, to 18 m high; branchlets sparsely pubescent. Leaves obovate-lanceolate, 2.5–4x 1–1.7 cm, coriaceous, cuneate at base, shortly acuminate at apex; lateral veins faint; petiole 2–3 mm long. Flowers 0.5–0.8 cm across, white, solitary, axillary, binate with opposite axils; pedicel 0.5–1 cm long. Bracts 2, linear-lanceolate, c. 3 mm long; bracteoles ovate, c. 3 mm long. Calyx tube sparsely pubescent; lobes 4, unequal, oblong, 2–4.2x 2.2–2.5 mm, sparsely pubescent; petals 4, orbicular, c. 0.7 cm long, clawed at base, Drupes oblongoid-ellipsoid, c. 1.5 cm across, sparsely pubescent; seed 1.

Type: INDIA, Tamil Nadu, Coimbatore Distr., Velliangiri hills, 1359 m, 12 December 2018, *M. Murugesan & V. Ravichandran 139190* (MH).

Distribution: Tamil Nadu; 1359–1700 m.

Flowering & Fruiting: October–December.

Eugenia wynadensis Bedd. in *Madras J. Lit. Sci.* III, 1: 47.1864. *Meteoromyrtus wynadensis* (Bedd.) Gamble in *Bull. Misc. Inform. Kew* 1918: 241.1918. (Fig. 3. F).

Small trees, to 6 m high; branchlets fulvous tomentose. Leaves elliptic, elliptic-oblong or oblong-lanceolate, 4–9x 1.5–3.5 cm, chartaceous, cuneate at base, caudate-acuminate at apex; lateral nerves 6–10 pairs; petioles 5–10 mm long. Inflorescence axillary or terminal racemes, to 1 cm long; peduncle c. 5 mm long. Flowers, 1.5 cm across, white, solitary or in pairs; pedicels slender, 1–1.5 cm long, rusty tomentose. Bracteoles linear, c. 2 mm long, fulvous tomentose. Calyx lobes 4, lanceolate, c. 3x 2 mm, subequal, fulvous tomentose; petals 4, white, elliptic-ovate, c. 10x 5 mm. Fruits globose or pot shaped, c. 2x 2 cm, fleshy when mature, greenish, sparsely fulvous hairy; seeds 1–4.

Type [Lectotype designated by Byng *et al.* (42)]: INDIA, Kerala, Wynad (Devallikottah), *Beddome 2943* (K) (Barcode K000821504)

Distribution: Karnataka, Tamil Nadu, Kerala; 650–1200 m.

Flowering & Fruiting: September–January (Karnataka); February–August (Tamil Nadu & Kerala).

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Authors' contributions

SSM drafted the manuscript. ESSK has checked the nomenclature part and modified the manuscript. Both authors read and approved the final manuscript.

Conflict of interest

The authors declare that they have no competing interests.

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