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Eugenia perunthenaruviana (Myrtaceae), a new species from Western Ghats, India

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Abstract

A new riparian species, *Eugenia perunthenaruviana* from Perunthenaruvi waterfalls, Pathanamthitta district, Kerala, India is described here. The new species is allied with *Eugenia mooniana, E. terpenophylla* and *E. cruciformis* and critical morphological analyses of the specimens and comparison with type specimens and literature shows distinctive characteristics such as smaller flowers, lanceolate bracts, unequal adaxially silvery-pubescent sepals, unequal semi-curved staminal filaments, apical gland in the connective, semi-curved style and oblong–ellipsoid middle depressed berry. A detailed description, photographs, and comparison of diagnostic characters with morphologically similar species are provided.

Key words: Eugeniinae, Taxonomy, Paleotropics, Indian Subcontinent

Introduction

Eugenia Linnaeus (1753: 470) is the second largest genus in the family Myrtaceae. The genus *Eugenia* has 1245 accepted species with maximum distribution in neotropics and scattered in New-guinea and Asia (POWO 2026). The genus is represented by 24 species and two infraspecific taxa in India of which 21 are endemic to the Western Ghats (Shareef *et al*. 2018, Maruthakkutti *et al.* 2019, Shareef & Kumar 2020).

During the field exploration at riparian forests of Pamba River near Perunthenaruvi waterfalls, Pathanamthitta district, Kerala, some specimens of an unidentified species of *Eugenia* were collected. Detailed analyses of type specimens and literature of the closely allied *Eugenia mooniana* Wight (1841: 13), *E. terpnophylla* Thwaites (1859: 114) and *E. cruciformis* B. Mani & Sinj. Thomas (2025: 291), revealed it as a distinct which is here proposed as new and described.

Materials and methods

The species was collected for the first time during the field trip in the riparian forests of Pamba River near Perunthenaruvi waterfalls, Pathanamthitta district of Kerala state, India in 2008. The authors collected new specimens in 2010 and 2025. The specimens were analyzed using Leica MZ80 series microscope and photographed with Nikon D70S camera. The type specimens of the related species are deposited in herbaria K and PDA (acronyms of herbaria cited follow Index Herbariorum 2026) and protologues were accessed digitally.

Results and discussion

Eugenia perunthenaruviana Nisha, Swanila and Joby, *sp. nov*. (Figure 1 & 2.)

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Type:—INDIA. Kerala: Pathanamthitta District, Perunthenaruvi, 9024’46.40”N 76052’35.61”E, 41m, 15 November 2025, Joby 342 (holotype CAL!, isotypes MH!, STC!).

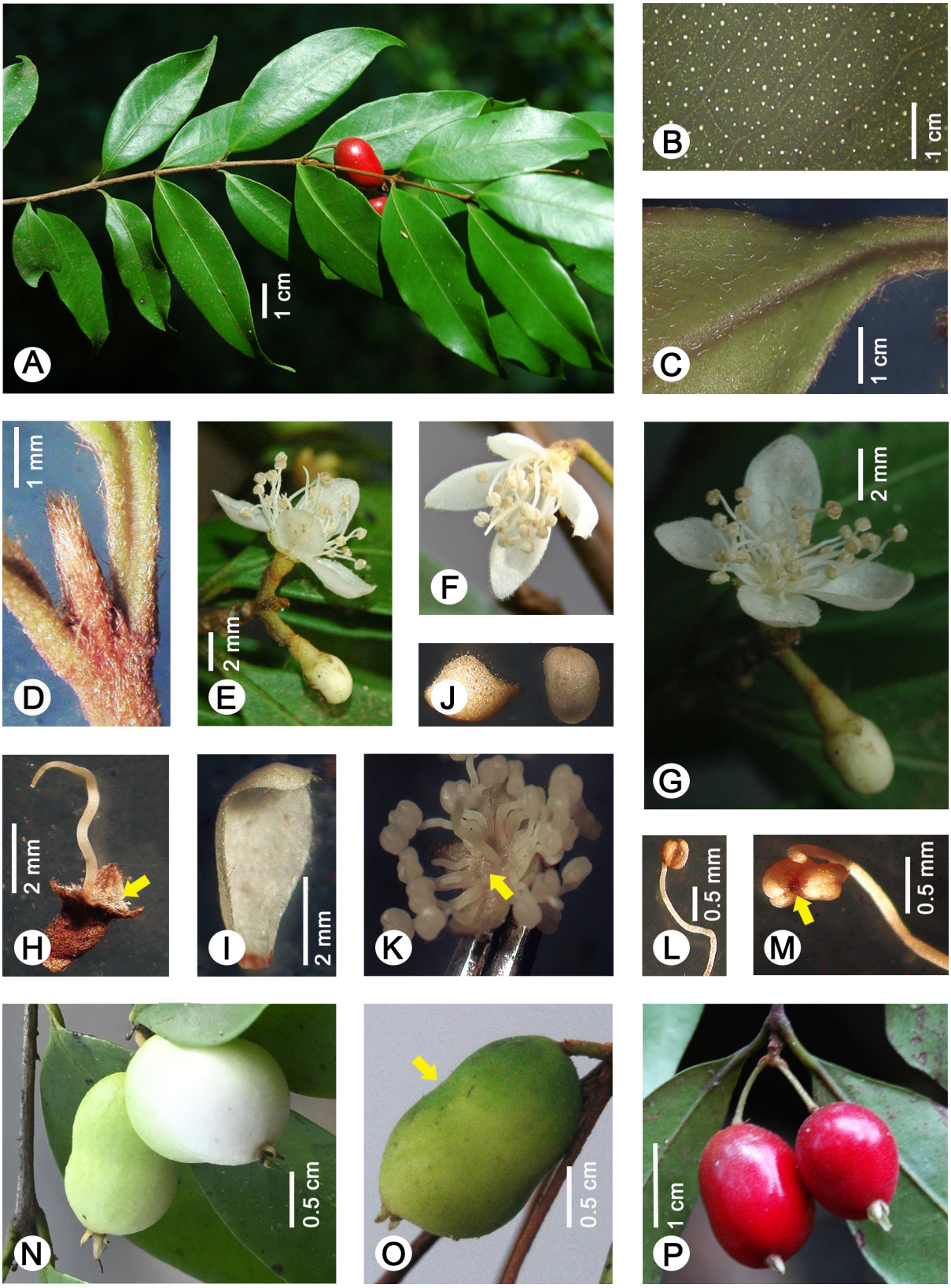


FIGURE 1. *Eugenia perunthenaruviana.* A) Habit. B) Gland-dotted leaf surface. C) Canaliculate petiole and puberulous lamina. D) Rusty-tomentose young branchlet. E, F & G) Flower. H) Rusty-tomentose sepals with silvery pubescent adaxial surface and style with capitate stigma. I & J) Petals with marginal hairs. K) Unequal stamens and silvery pubescent sepals and hypanthium. L) Stamen. M) Anther with apical gland. N, O & P) Middle depressed fruits (see arrow). (Photograph by Joby Paul.)



FIGURE 2. *Eugenia perunthenaruviana.* Holotype specimen.

Diagnosis:—*Eugenia perunthenaruviana* closely resembles *E. mooniana* in sharing a shrubby habit, canaliculate petioles, single-tiered intramarginal venation, pubescent bracts, capitate stigmas, and 1–2-seeded berries. However, *E.*

perunthenaruviana is distinguished by its smaller flowers (0.8–1 cm *versus* 1.0–1.5 cm across in *E. mooniana*), longer, lanceolate bracts (4 mm long *vs*. ca. 2.2 mm long and oblong), unequal sepals (*vs*. equal) sepals adaxially silvery-pubescent (*vs*. glabrous), shorter staminal filaments (2 mm *vs*. 4–7 mm), apical gland in the connective (*vs*. dorsal), and a shorter style (2.5 mm *vs*. 3–6 mm long).

Description:—Shrubs, up to 1.5 m high. Tender branches pubescent, rusty-tomentose with golden-brown hairs, internodes 0.5–4.5 cm. Leaves opposite in mature stem or rarely sub-opposite in tender branches, simple, lanceolate, petioles 3–4 mm long, rusty-tomentose, canaliculate above, drying black, laminas 3–8 × 2.5 cm, elliptic-ovate-lanceolate, chartaceous, base acute-obtuse, apex caudate-acuminate, margin slightly undulate, midrib raised beneath, abaxially and adaxially puberulous, lamina glabrous, puberulous when young, gland-dotted, drying dark brown above and pale brown beneath, lateral nerves 6–8 pairs, slender, obscure above and prominent beneath, venation intramarginal 1-tiered, 1 mm from the margin. Inflorescence axillary, rarely extra axillary to terminal, solitary or two flowered, peduncle pubescent. Bracts 2, lanceolate, 4 mm long, pubescent. Bracteoles 2, 2 mm long, lanceolate, rusty-pubescent. Pedicels 1–1.5 cm long, rusty-pubescent. Flowers white, 0.8–1 cm across. Sepals in two unequal pairs, ovate, acute, rusty-pubescent outside, silvery-pubescent inside, gland-dotted, large sepals 2 × 1 mm, small sepals 1 × 1 mm. Petals 4, 4.5 × 2.5 mm, orbicular, white, margin ciliate, gland-dotted. Hypanthium silvery-pubescent. Stamens 20-28, filaments filiform, unequal, 2 mm, semi-curved, white, anther lobes 0.5 mm, bithecous, gland apical. Style 2.5 mm, glabrous, pale green-white, coiled, stigma capitate. Fruit berry, oblong–ellipsoid, occasionally middle depressed, 1–1.2 cm in diameter, sparsely pubescent, red–crimson, crowned by the sepals. Seeds 1–2.

Paratypes:—INDIA. Kerala: Pathanamthitta District, Perunthenaruvi, 9^{0}24’46.40”N 76^{0}52’35.61”E, 41m, 13 March 2008, *Joby & Sreerenjini 721*; 6 January 2010, *Joby & George 976*; 58m, 6 January 2010, *Joby & George 999* (both specimens at Herbarium, School of Environmental Sciences, Mahatma Gandhi University, Kottayam, Kerala; no acronym available).

Specimens examined for related species:—*E. mooniana*: INDIA, Tamil Nadu, Courtallum, Shevagherry hills, August 1836, *Wight 1851* (K, lectotype, image!); ***E. terpnophylla*:** SRI LANKA, Kandy district: Ambagamuwa, without date, without collector, *C.P. 2623* (PDA, image!)

Notes:—The genus *Eugenia* shows notable diversity in the Western Ghats, especially in the geographical region of Kerala state which is evident from recent new species discoveries (Murugan & Gopalan 2005, Gopalan & Murugan 2008, Manoharan *et al.* 2021, Murugan & Arumugam 2019, Arumugam & Murugan 2022, Jose *et al*. 2024, Mani & Thomas 2025).

Eugenia perunthenaruviana is closely related to *E. mooniana, E. terpnophylla* and the recently published *E. cruciformis*; it can be morphologically distinguished from them by the features listed in Table 1. A detailed taxonomic key to the related species is given below:

1	Lateral nerves 6−8 pairs, leaves 3−9 × 1−4.5 cm, stigma capitate, seeds 1−2.....2
-	Lateral nerves 14−25 pairs, leaves 6−14 × 1.5−4.5 cm, stigma not capitate, seeds 1−4.....3
2	Flowers 1.0 −1.5 cm across, bracts oblong, *ca*. 2.2 mm long, sepals equal, glabrous inside, staminal filaments 4−7 mm, gland dorsal, style 3–6 mm long ..... *Eugenia mooniana*
-	Flowers 0.8−1 cm across, bracts lanceolate, 4 mm long, sepals unequal, silvery pubescent inside, staminal filaments 2 mm, gland apical, style 2.5 mm long.....*Eugenia perunthenaruviana*
3	Intramarginal venation 2-tiered, anthers broadly elliptic, style slender, stigma entire.....*Eugenia terpnophylla*
-	Intramarginal venation 1-tiered, anthers reniform, style turgid, stigma acute..... *Eugenia cruciformis*

Phenology:—Flowering and fruiting during September to November.

Etymology:—The specific epithet ‘*perunthenaruviana*’ is derived from the locality of collection namely Perunthenaruvi, Pathanamthitta district, Kerala, India.

Habitat and distribution:—*Eugenia perunthenaruviana* is reported from Perunthenaruvi of Kerala state. The new species is distributed along the river margin and sandy soil of flood plain. Associated flora includes *Garcinia wightii* T.Anderson (1874: 265), *Lagerstroemia speciosa* (L.) Martyn (1798: 2(1)) and *Vitex leucoxylon* L.f. (1782: 293). The plant is deeply rooted in the sandy flood plain between the rocky substratum, and has strong flexible stems to withstand intensive flood disturbances, highly adapted as riparian vegetation.

Conservation status:—*Eugenia perunthenaruviana* is confined to the type locality, Perunthenaruvi, with an elevation of 41−58m along the floodplains of Pamba River. The species is represented by a few members, distributed along 1 km upstream stretch of Perunthenaruvi waterfall and each plant occupies 1−2 square meter area. The vegetation is highly unique and its conservation is crucial. The riparian vegetation including *E. perunthenaruviana* protects the

river and associated fauna. Repeated explorations were carried out for the past two decades and the material was found confined only to the type locality.

TABLE 1. Comparison of diagnostic characters of *Eugenia perunthenaruviana, E. mooniana, E. cruciformis* and *E. terpnophylla.*

Characters	*E. perunthenaruviana*	*E. mooniana*	*E. cruciformis*	*E. terpnophylla*
Habit	Shrubs, up to 1.5 m height	Shrubs, up to 4 m height	Shrubs up to 2 m high	Shrubs or small trees, up to 6 m height.
Branchlets	Branchlets pubescent—rusty tomentose, golden-brown hairs	Branchlets glabrous, puberulous when young	Young branchlets terete to slightly compressed, brown tomentose	Branchlets densely covered with golden-brown hairs
Petioles	3–4 mm long, rusty tomentose, canaliculate above	3–7 mm long, glabrous, slender, canaliculate above	3–6 mm long, glabrous, round beneath, canaliculate above	5–8 mm long, drying black, canaliculate above
Leaves	Leaves opposite or sub-opposite, simple, lanceolate, 3–8 × 1–2.5 cm, caudate—acuminate apex, chartaceous, acute-obtuse base, lateral nerves 6–8 pairs, slender, obscure above and prominent beneath, venation intra-marginal, 1 tiered, midrib raised beneath, drying dark brown above and pale brown beneath, puberulous when young	Leaves simple, puberulous when young, slightly crimson, sub-coriaceous, 6–9 × 2.5–4.4 cm, broadly ovate or ovate-elliptic or elliptic-lanceolate, narrowly or broadly cuneate at base, shortly or long acuminate at apex, up to 1.5 cm long; lateral nerves 8– 10 pairs, fine, faint, venation intra-marginal, 1 tiered	Leaves opposite; leaf blades oblong to narrowly elliptic, 6−8.5 × 1.5−2.7 cm wide, cuneate at base, acuminate at apex, coriaceous, midrib prominent beneath, grooved above, lateral veins 16−25 at each side, young leaves sparsely pubescent on adaxial surface	Leaves opposite or sub-opposite, narrowly or broadly elliptic, 6.5–14 × 2.4–4.5 cm, acute or obtuse at base, obtusely caudate-acuminate at apex, thinly coriaceous, glabrous, drying dark brown above and pale brown beneath; lateral nerves 14–18 pairs, slender, obscure above and prominent beneath, midrib raised beneath, drying black, venation intra-marginal, 2 tiered
Inflorescences	Axillary, rarely extra axillary; solitary or 2 flowered	Lax terminal or axillary clusters or extra axillary; solitary or in short racemes	Axillary or terminal; flowers solitary or in 2–4 flowered racemes	Axillary clusters, flowers 2–12 aggregated in axillary, terminal or lateral clusters
Flowers	Flowers 0.8–1 cm across, white	Flowers ca. 1.5 cm across, white	Flowers ca. 0.8 cm across, white	Flowers ca. 1 cm across, white
Bracts	Bracts 2, lanceolate, 4 mm long, pubescent	Bracts 2, oblong, ca. 2.2 mm long, pubescent	Bracts 2, linear, ca. 1.25 × 0.5 mm, pubescent	Bracts 2, lanceolate, 2 mm long, pubescent
Bracteoles	Bracteoles 2, 2 mm long, lanceolate, rusty pubescent	Bracteoles 2, oblong, 2 mm long, fulvous tomentose	Bracteoles ca. 0.7 mm long, narrowly triangular-subulate, multicellular brown hairs	Bracteoles 2, linear lanceolate, 1.5–2 mm long
Pedicels	1−1.5 cm, rusty pubescent	1−2.5 cm, very slender, pubescent	1−2 mm long, pubescent, hairs pale brown	0.6–0.9 cm long, pubescent
Calyx	Sepals 4, unequal, large sepals 2 × 1 mm, ovate, acute, rusty pubescent, small sepals 1 x 1 mm ovate, brown, rusty pubescent outside, silvery pubescent inside	Sepals 4, cup shaped, equal, oblong, ca. 3 × 1.5 mm refluxed, pubescent outer surface, glabrous inside	Sepals 4, ca. 1 mm long, slightly unequal pairs, deltoid, pale brown tomentose outside, obtuse at apex, oil glands present	Sepals 4, campanulate, to 3−4 mm, rusty pubescent; sub-orbicular, to 2.0 × 1.7 mm.
Corolla	Petals 4, 4.5 × 2.5 mm, orbicular, white, margin ciliate, gland-dotted, white	Petals 4, 5−10 × 2−5 mm, elliptic–obovate–ovate, spathulate, margin ciliate, white	Petals 4, ca. 5 × 3 mm, oblong, white, margin ciliate, round at apex, recurved on maturity, gland-dotted	Petals 4, 4 × 2 mm, sub-orbicular, narrowly elliptic-oblong, obtuse at apex, margin ciliate, gland-dotted, white

.....continued on the next page

TABLE 1. (Continued)

Characters	*E. perunthenaruviana*	*E. mooniana*	*E. cruciformis*	*E. terpnophylla*
Androecium	Stamens 20-28, filaments filiform, 2 mm, filaments semi-curved, white, anther lobes 0.5 mm, gland apical	Stamens numerous, unequal, filaments 4–7 mm long, white, anther 1 mm, gland dorsal	Stamens numerous, unequal, 2.5−5.5 mm long; filaments filiform, 2.2−5.2 mm long; anthers reniform, 2-celled, ca. 0.3 × 0.5 mm	Stamens numerous, inserted on calyx limb; filaments filiform, 4−5 mm long; anthers broadly elliptic, ca 1 mm long
Gynoecium	Style 2.5 mm long, semi-curved, stigma capitate	Style 3–6 mm long, stigma capitate	Style turgid, ca. 6 mm long, white, glabrous; stigma simple, acute	Style slender, 4.5−5.0 mm long; stigma entire
Fruit	Berry oblong–ellipsoid, middle depressed, 1–1.2 cm diameter, sparsely pubescent, persistent calyx, red to crimson	Berry depressed globose to ovoid, 1.25−1.5 cm diameter, sparsely fulvous tomentose, persistent calyx, crimson	Berry broadly ellipsoid, 2.5−3 × 1.5−2 cm in diameter, sparsely pubescent, persistent calyx, crimson	Berry globose to ellipsoid, 1.2–1.9 cm, persistent calyx
Seed	1–2	1−2	1	1–4

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