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Eugenia bolampattiana (Myrtaceae), a new species from the Bolampatty Hills of Nilgiri Biosphere Reserve, India

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ABSTRACT. *Eugenia bolampattiana* V.Ravich., Murug. & Murugan (Myrtaceae) is described as a new species from the Bolampatty Hills, Coimbatore District, which is a part of the Nilgiri Biosphere Reserve in the Western Ghats of Tamil Nadu, India. A detailed description, illustration, colour photographs, phenology, and relevant ecological notes are provided, along with a comparison of the morphologically similar species *Eugenia mooniana* Wight and *Eugenia kalamii* Shareef et al.

Keywords. Critically endangered, endemic, *Eugenia* sect. *Jossinia*, Kovai Courtallum

Introduction

Eugenia L. is the second largest genus in the family Myrtaceae with about 1200 species (Govaerts et al., 2019; Murugesan et al., 2019), which are mainly distributed in South America with fewer species in Africa, Southeast Asia, Malaysia, Madagascar (c. 80 species) and New Caledonia (at least 60 species). The species in Madagascar and New Caledonia comprise c. 12–14% of the total number of species in the genus (Snow et al., 2015, 2016; Mazine et al., 2016; Giaretta et al., 2018). Molecular phylogenetic studies have indicated that all non-South-American *Eugenia* are grouped in a single clade currently named *Eugenia* sect. *Jossinia* (DC.) Nied. (Mazine et al., 2018). In India, the genus is represented by 26 taxa (24 species, one subspecies and one variety), including the recently described *Eugenia terpnophylla* Thwaites var. *keralensis* Shareef et al., *E. kalamii* Shareef et al., *E. megamalayana* Murugan & Arum., and *E. velliangiriana* Murug. et al. All 26 taxa occur in Peninsular India, 20 of which are endemic to the Western Ghats, including three species that are narrowly endemic to the Nilgiri Biosphere Reserve.

Materials and methods

During a recent botanical exploration in the Bolampatty Hills in the Nilgiri Biosphere Reserve of the Coimbatore District of the Western Ghats, India, the authors came across interesting specimens of a *Eugenia* species. Critical examination and perusal of the relevant literature (Byng et al., 2015; Duthie, 1879; Murugan, 2002; Gopalan &

Srinivasan, 2003; Murugan & Gopalan, 2005; Gopalan & Murugan, 2008; Shareef et al., 2011, 2018; Murugan & Arumugam, 2019; Murugesan et al., 2019), coupled with consultation of type specimens (BM, CAL, E, G, K, L, MH, P), led to the conclusion that the specimens do not match any known species. We therefore propose it here as a new species and provide a photograph and illustration (Fig. 1).

Taxonomic treatment

Eugenia bolampattiana V.Ravich., Murug. & Murugan, **sp. nov.**
The new species is closely allied to *Eugenia mooniana* Wight, but it differs in the habit being a tree (vs shrub), young shoots fulvous tomentose (vs glabrous), leaf laminas linear lanceolate, base cuneate, apex emarginate (vs ovate, tapering, acuminate), fruits obovoid, c. 1 cm in diameter, orange (vs globose, c. 1.25 cm in diameter, pinkish) and number of seeds 1 (vs 1–2). It is also allied to *Eugenia kalamii* but can be distinguished by being a small tree, 5–12 m tall (vs undershrub, up to 1 m tall), young shoots brownish tomentose (vs silvery tomentose), leaf laminas linear lanceolate, base cuneate, apex emarginate (vs ovate-lanceolate, base acute, apex narrowly acuminate), and fruit obovoid to globose, c. 1 cm in diameter, orange (vs ellipsoid or rarely obovoid, c. 1 cm in diameter, crimson). (Table 1). – TYPE: India, Tamil Nadu, Coimbatore District, Bolambatty hills, above Kovai Courtallum, 10°56.216'N 76°41.040'E, 758 m, 4 May 2019, *V. Ravichandran & C. Murugan 145702* (holotype MH; isotypes CAL, MH). (Fig. 1 & 2).

Medium-sized trees, 5–12 m high; bark smooth, grey; branchlets brown, terete; young stems brownish tomentose. Petiole 0.3–0.5 cm long, sulcate above, rounded below, sparsely brownish tomentose. ***Leaf blades*** 2–5 × 0.5–1.5 cm, linear-lanceolate or elliptic-lanceolate, membranous, base cuneate, margins entire, apex emarginate, glabrous and glossy above; midrib flat, channelled above, rounded beneath; secondary veins 12–15 pairs, faint. ***Flowers*** usually terminal, rarely axillary, solitary, white (all parts); bracteoles 2, ovate-oblong, 0.8–1 × 0.8–1.1 mm, densely brown hairy; pedicels 0.3–0.5 cm long, brownish tomentose, terete; bracts 2, linear-lanceolate, c. 5 × 3 mm, densely brownish hairy, glabrous within. ***Calyx lobes*** campanulate, lobes 4 (2+2), unequal, the longer ones c. 1.5 mm, the shorter c. 0.5 mm, densely brownish hairy on lower surface, apex rounded, ciliate. ***Petals*** 4, alternate with calyx lobes, ovate-elliptic, c. 3 × 3.5 mm, twice as long as the calyx lobes, often reflexed. ***Stamens*** numerous, white; filaments c. 3 mm long; anthers basifixed, pale white, c. 0.5 mm long. ***Hypanthium*** globose with calyx tube c. 0.5 mm long; ovary rounded beneath the base of the style and raised above surface of disc, 2-celled, ovules many; style subulate, slender, simple, c. 5 mm long. ***Fruits*** obovoid, rarely globose, c. 2.5 × 1.5 cm, calyx lobes persistent but short, orange when ripe. ***Seeds*** 1, c. 1 cm, globose to ellipsoid.

Distribution. Known only from the Bolambatty Hills above Kovai Courtallum of the Coimbatore District, Tamil Nadu, India.

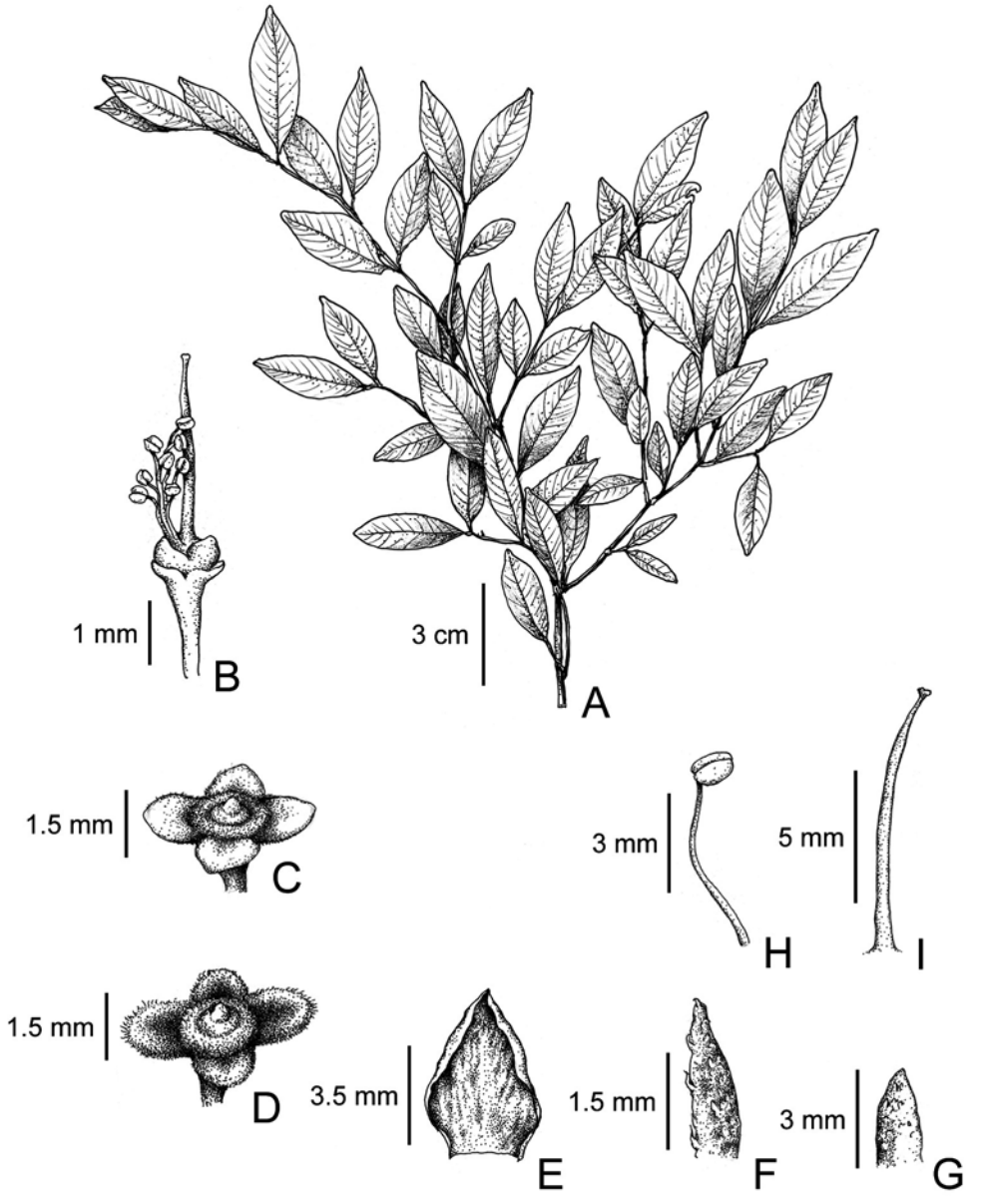

Fig. 1. *Eugenia bolampattiana* V.Ravich., Murug. & Murugan. **A.** Branch. **B.** Stamens, pistil and disc. **C.** Calyx and disc (top view). **D.** Calyx and raised ovary (side view). **E.** Petal. **F.** Bract. **G.** Bracteole. **H.** Stamen. **I.** Stigma. Drawn by A.T. Durgadas from V. Ravichandran & C. Murugan 145702 (Type).

Table 1. Diagnostic differences between *Eugenia bolampattiana* and the morphologically similar species *E. mooniana* and *E. kalamii*.

Character state	*E. mooniana*	*E. kalamii*	*E. bolampattiana*
Habit	Shrubs up to 4 m high	Shrubs, up to 1 m high	Small trees, 5–12 m high
Branchlets	Glabrous	Silvery pubescent	Tawny pubescent
Leaves	4–6 × 2–3 cm, ovate, tapering at base, apex acuminate	2.5–9 × 2.5–3.5 cm, ovate-lanceolate, acute at base, apex narrowly acuminate	2–5 × 0.5–1.5 cm, linear elliptic-lanceolate, cuneate at base, apex emarginate
Lateral veins	6–10 pairs	10–14 pairs	12–15 pairs
Petiole	6–8 mm long, brown pubescent	1.5–4 mm long, silvery pubescent	3–5 mm long, sparsely brownish pubescent
Inflorescence	Solitary, rarely in terminal clusters or in short raceme	Terminal, axillary or rarely lateral	Usually terminal, rarely solitary in axils
Pedicel	0.6–0.9 cm, glabrous	0.2–0.6 cm, silvery pubescent	0.3–0.5 cm, ferrugineous tomentose
Fruit	Globose, diameter c. 1.25 cm, pinkish	Ellipsoid or rarely obovoid; diameter c. 1 cm, crimson	Obovoid to globose, diameter c. 1 cm, orange
Seeds	1–2	1	1

Ecology. It grows in association with *Canarium strictum* Roxb., *Ixora* sp., *Pavetta tomentosa* Roxb. ex Sm., *Munronia pinnata* (Wall.) W.Theob., *Syzygium cumini* (L.) Skeels, *Litsea glutinosa* (Lour.) C.B.Rob., *Memecylon umbellatum* Burm.f., *Litsea stocksii* Hook.f., *Erycibe paniculata* Roxb., *Artabotrys zeylanicus* Hook.f. & Thomson, etc. at 758 m asl.

Phenology. Flowering: April–July. Fruiting: May–July.

Etymology. The new species is named after the type locality, Bolampatty Hills, Tamil Nadu.

Provisional IUCN conservation assessment. The newly described species is currently known only from the type locality, where only 18 individuals occur in a forest area of 10 km^2. Its distribution has been evaluated under the Red List Categories and Criteria of the IUCN Standards and Petitions Subcommittee (2017) and is assessed here as

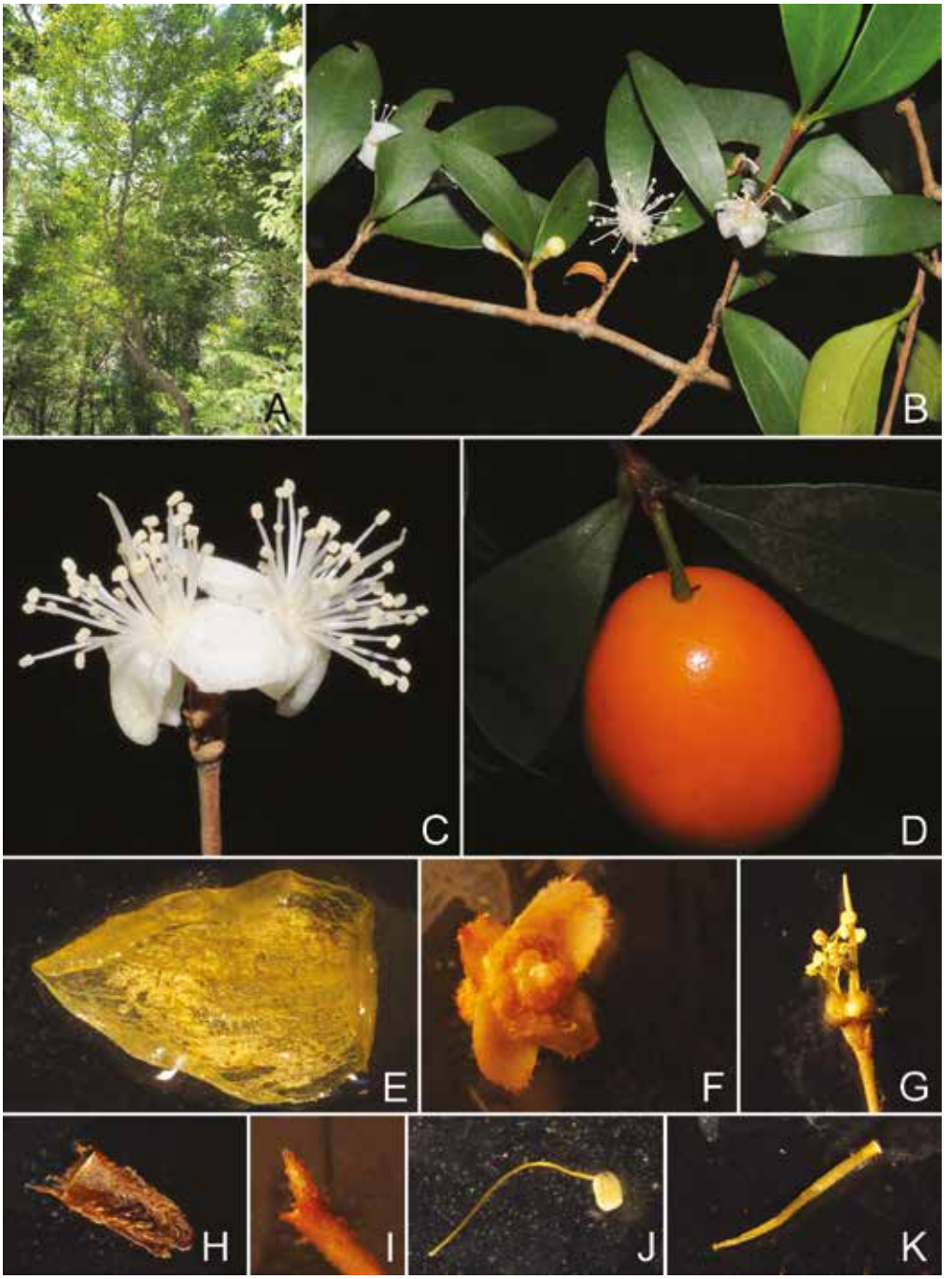

Fig. 2. *Eugenia bolampattiana* V.Ravich., Murug. & Murugan. **A.** Habit. **B.** Flowering branch. **C.** Flower, close up view. **D.** Fruit. **E.** Petal. **F.** Calyx lobes with staminal disc. **G.** Stamens arising from staminal disk and style. **H.** Bract. **I.** Bracteole. **J.** Stamen. **K.** Stigma. All from *V. Ravichandran & C. Murugan 145702*; see Fig. 1 for scale bars. (Photos: V. Ravichandran).

Critically Endangered (CR B1ab(iii), B2ab(iii)). Habitat destruction caused by tourism, collection of Minor Forest Produces (MFP) by local people, and firewood collection were determined as the major threats during the study period. Extensive exploration of similar habitats and microenvironments in adjacent localities are desirable for determining its greater distribution in other parts of Nilgiri Biosphere Reserve, The Western Ghats.

Additional specimen examined. INDIA: **Tamil Nadu:** Coimbatore district, Bolambatty hills, above Kovai Courtallum, 10°56.216'N 76°41.040'E, 758 m, 4 May 2019, *Ravichandran & Murugan* 139167 (MH).

Notes. *Eugenia bolampattiana* can be distinguished from closely related species using the following key.

Key to *Eugenia* spp. morphologically similar to *Eugenia bolampattiana*

1a. Small to medium sized trees up to 12 m high ..... *E. bolampattiana*
1b. Shrubs up to 4 m high 2
2a. Branchlets glabrous; leaf veins 6–10 pairs; fruits globose, pinkish ..... *E. mooniana*
2b. Branchlets silvery pubescent; leaf veins 10–14 pairs; fruits ellipsoid or obovoid, crimson ..... *E. kalamii*

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