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EXPANDING THE FLORA OF JAVA: AN ADDITIONAL ORNAMENTAL *COLEUS* (LAMIACEAE) SPECIES

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ABSTRAK

Arifin Surya Dwipa Irsyam 2025. Memperluas Flora Jawa: Satu Jenis *Coleus* (Lamiaceae) Ornamental Tambahan. Floribunda 8(2) 67 – 73 — *Coleus* Lour. merupakan marga Dunia Lama yang banyak dibudidayakan sebagai tanaman hias dan obat, dengan tujuh jenis yang sebelumnya telah tercatat dari Pulau Jawa. Namun demikian, komposisi flora Jawa bersifat dinamis dan terus berubah seiring dengan introduksi tanaman budi daya, sementara sejumlah taksa ornamental yang diperkenalkan relatif baru masih belum terdokumentasi secara formal. Penelitian ini bertujuan untuk mendokumentasikan keberadaan satu jenis *Coleus* ornamental tambahan di Jawa serta menjelaskan signifikansi taksonomi dan floristiknya. Pengamatan lapangan dan pengoleksian spesimen dilakukan di Jawa Barat, dan identifikasi taksonomi didasarkan pada kajian morfologi serta perbandingan dengan literatur yang relevan. Hasil penelitian ini mencatat *Coleus prostratus* (Gürke) A.J.Paton sebagai catatan baru bagi flora Jawa, yang ditemukan secara eksklusif dalam kondisi budi daya sebagai tanaman hias gantung. Jenis ini dapat dibedakan dari jenis *Coleus* lain yang terdapat di Jawa berdasarkan habitus menjalar, daun kecil berdaging, serta ciri morfologi vegetatif yang khas. Pencatatan ini menambah kekayaan jenis *Coleus* di Jawa dan menegaskan pentingnya pendokumentasian tanaman ornamental budi daya sebagai bagian dari inventarisasi flora kontemporer, khususnya untuk mendukung penilaian potensi naturalisasi dan perubahan keanekaragaman hayati di masa mendatang.

Kata kunci: Lamiales, Malesia, Ocimeae, Ornamental, Plectranthineae.

Arifin Surya Dwipa Irsyam 2025. Expanding The Flora of Java: An additional ornamental *Coleus* (Lamiaceae) species. Floribunda 8(2) 67 – 73 — *Coleus* Lour. is an Old-World genus widely cultivated as ornamental and medicinal plants, with seven species previously documented from Java. However, the regional flora continues to change due to ongoing horticultural introductions, and recently introduced cultivated taxa remain under-documented. This study aims to document the occurrence of an additional ornamental *Coleus* species in Java and to clarify its taxonomic and floristic significance. Field observations and specimen collections were conducted in West Java, and taxonomic identification was based on morphological examination and comparison with relevant literature. As a result, *Coleus prostratus* (Gürke) A.J.Paton is recorded here for the first time from Java, where it occurs exclusively in cultivated settings as a hanging ornamental plant. The species is readily distinguishable from other *Coleus* taxa in Java by its prostrate habit, small fleshy leaves, and characteristic vegetative morphology. This record increases the documented diversity of *Coleus* in Java and highlights the importance of documenting cultivated ornamental plants as part of contemporary floristic inventories, particularly in relation to future assessments of naturalization and biodiversity change.

Keywords: Lamiales, Malesia, Ocimeae, Ornamental, Plectranthineae.

INTRODUCTION

Coleus Lour. represents a plant genus with extensive use in horticulture and traditional medicine. The genus is classified within the tribe Ocimeae and the subtribe Plectranthinae, a predominantly Old-World tropical lineage comprising roughly 320 accepted species (Suddee *et al*., 2004; Paton *et al*., 2019; POWO, 2025). Recent taxonomic approaches, as outlined by Paton *et al.* (2019) and Kiew and Kamin (2021) and, have treated *Plectranthus* L'Hér. as a genus distinct from *Coleus*.

Morphologically, *Coleus* can be diagnosed by a set of characters involving the pedicel, calyx, and corolla. The pedicel is attached asymmetrically at the base of the calyx tube, positioned opposite the posterior lip. The calyx is very rarely circumscissile, with a tube that is not dorsiventrally flattened, and is typically 5-lobed (one upper and four lower lobes, or occasionally actinomorphic); in fruit, it may rarely become expanded and membranous. The corolla is strongly zygomorphic, with declinate stamens. The lateral corolla lobes ascend toward the median lobes of the posterior lip or are held horizontally between the anterior lobe and the median lobes of the posterior lip. The posterior lip of the corolla is not truncate and diverges from the anterior lip, with the lateral lobes generally ascending and closely appressed to the median lobes. The upper (posterior) corolla lip is shorter than the lower (anterior) lip, though both may rarely be subequally lobed (Paton *et al*., 2019).

The genus is represented in Java by seven species: *Coleus amboinicus* Lour., *C. galeatus* (Vahl) Benth., *C. monostachyus* (P.Beauv.) A.J.Paton, *C. petraeus* (Backer ex Adelb.) A.J.Paton, *C. rotundifolius* (Poir.) A.Chev. & Perrot, *C. scutellarioides* (L.) Benth., and *C. verticillatus* (Baker) A.J.Paton (Backer & Bakhuizen van den Brink, 1965; Irsyam & Mountara, 2018; Paton *et al*., 2019; Irsyam *et al*., 2023). Four names previously recorded from Java have undergone taxonomic revision: *Plectranthus monostachyus* P.Beauv. is now treated as a synonym of *Coleus monostachyus*; *P. petraeus* Back. ex Adelb. is currently regarded as a synonym of *C. petraeus*; *P. verticillatus* Baker is considered conspecific with *C. verticillatus*; and *Coleus parviflorus* Benth. is now recognized as a synonym of *C. rotundifolius* (Poir.) A.Chev. & Perrot (Paton *et al*., 2019; POWO, 2025). These taxonomic adjustments reflect an improved understanding of species circumscription, supported by recent morphological assessments and phylogenetic evidence.

According to earlier botanical surveys, an additional introduced *Coleus* species has been cultivated in Java as a hanging ornamental plant, namely *C. prostratus* (Gürke) A.J.Paton. A brief account, including a description and photographic documentation, is provided in the present paper.

Despite the long history of botanical exploration in Java, the regional flora remains dynamic and incompletely documented, particularly with respect to introduced and cultivated ornamental taxa. Classical floristic works, including Flora of Java, necessarily reflect the temporal context in which they were produced and therefore do not account for species introduced through more recent horticultural activities. As a result, several cultivated plants that are now widely grown, and in some cases have the potential to escape cultivation, remain absent from formal floristic records (Irsyam *et al*., 2019; Irsyam *et al*., 2022; Irsyam *et al*., 2024; Irsyam *et al*., 2025a; Irsyam *et al*., 2025b; Kurniawan *et al*., 2025).

Within Lamiaceae, the genus *Coleus* presents a particular challenge due to its extensive horticultural use and recent taxonomic re-circumscription (Paton *et al*., 2019). The lack of documentation of certain ornamental *Coleus* species in Java limits our understanding of contemporary species richness, obscures introduction pathways, and reduces the effectiveness of floristic inventories as tools for biodiversity assessment and ecological monitoring.

Therefore, this study documents the occurrence of *C. prostratus* as an additional cultivated species in Java, supported by herbarium voucher specimens and morphological observations, and discusses its taxonomic and floristic significance within the context of the Javanese flora.

MATERIALS AND METHODS

Fieldwork for this study was undertaken in 2025 at various sites across West Java. Plant specimens were collected in situ following the collection guidelines provided by the Royal Botanic Garden Edinburgh (2017). The materials were preserved using the procedures detailed by Bridson & Forman (1992) and later curated within the Herbarium Bandungense (FIPIA), School of Life Sciences and Technology, Institut Teknologi Bandung. Taxonomic determinations were made with the aid of essential references such as Gürke (1894), Baker (1900), and Paton *et al*. (2019). Morphological descriptions were compiled using standardized botanical vocabulary following the framework of Beentje (2016).

RESULT AND DISCUSSION

The documentation of *Coleus prostratus* as an additional cultivated species in Java is of particular floristic and taxonomic significance. This record updates the known diversity of *Coleus* in Java and demonstrates that the regional flora continues to change in response to ongoing horticultural introductions. The absence of this species from classical floristic treatments reflects temporal limitations of earlier works rather than taxonomic oversight, highlighting the need for continuous reassessment of the flora based on recent field observations and herbarium evidence.

From a taxonomic perspective, the inclusion of *C. prostratus* aligns the floristic treatment of Java with current generic concepts within Plectranthinae and contributes to a more accurate representation of species richness in *Coleus*. Floristically, the formal recording of cultivated ornamental taxa provides essential baseline data for tracking future changes in distribution, including potential escape from cultivation or naturalization. Given that some introduced *Coleus* species have already demonstrated the ability to establish outside cultivation in Java (Irsyam & Mountara 2018; Irsyam et al. 2023), early documentation such as this is critical for biodiversity assessment, ecological monitoring, and long-term conservation planning.

Taxonomic Treatment

***Coleus prostratus* (Gürke) A.J.Paton**, PhytoKeys 129: 86 (2019); *Plectranthus prostratus* Gürke, Bot. Jahrb. Syst. 19: 206 (1894); Baker in Engl. Jahrb. xix. 206: 404 (1900); Paton *et al*., PhytoKeys 129: 86 (2019). —Type: Tanzania, Pangani, *Volkens 484* (syn B, destroyed; isosyn: G) & North Mara District: Ukira, *Fischer 497* (syn B, destroyed). (Figs. 1 & 2).

Plectranthus quadridentatus Schweinf. ex Baker in D.Oliver & auct. suc. (eds.), Fl. Trop. Afr. 5: 409 (1900); Paton *et al*., PhytoKeys 129: 86 (2019). Type: Eritrea, Mount Alam Kale, NW of Aidereso, *Schweinfurth & Riva 2086* (holo K).

Plectranthus margeritae Buscal. & Muschl., Bot. Jahrb. Syst. 49: 485 (1913); Paton *et al*., PhytoKeys 129: 86 (2019). Type: Neumann Camp (Kenya; however, the specimens actually originate from eastern or northeastern Africa and Yemen), *von Aosta 1688* (holo B, destroyed); neotype: Eritrea, Nefasit, base of Mt Bizen, *Ryding et al. 2095* (neo: C; isoneo: ASMU, ETH, UPS, designated by Ryding (2001)).

Plectranthus ugandensis Lye, Norweg. J. Bot. 20: 57 (1973); Paton *et al*., PhytoKeys 129: 86 (2019), *nom. illeg*., non *P. ugandensis* S.Moore.

Perennial herb, semisucculent, aromatic. Stems prostrate to creeping, up to 1.5 mm in diameter, rooting and branching at the nodes, densely tomentose, brown or purple to greenish brown; nodes conspicuously swollen; internodes 2–20 mm long. Leaves simple, decussate; petioles short, 2–7 mm long, purplish green to green, tomentose; leaf blades ovate, slightly curved, 5–19 × 3–14 mm; base cuneate to obtuse, margins undulate to obscurely crenate, ciliate, apex acute; venation inconspicuous; adaxial surface yellow-green, abaxial surface yellow-green, becoming purplish under high light intensity; indumentum tomentose on both surfaces; sessile glandular

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trichomes (glandular dots) present on both surfaces, reddish orange. Inflorescences axillary, verticillate, sessile; 1–5 flowers per cyme; pedicels up to 9 mm long, pubescent, dark red; calyx bilabiate, campanulate, ca. 3 mm long, 5-lobed, exterior pubescent, glandular, reddish yellow, persistent; calyx bilabiate, campanulate, 4 mm long, 5-lobed, exterior pubescent, glandular, reddish yellow, persistent; posterior lip 1-lobed, broad, ovate, ca. 2.5 × 1.5 mm; anterior lip 4-lobed, lobes narrowly triangular, ca. 2 × 0.5 mm; corolla bilabiate, zygomorphic; tube exserted from calyx, white; posterior lip 4-lobed, lobes rounded, white; anterior lip 1-lobed, concave, longer than posterior, purple; stamens 4 didynamous; filaments filiform, curved, ca. 1 mm long, lower half white, upper half dark purple; anthers oblong, dorsifixed, yellow; style filiform, lower half white, upper half dark purple, curved; stigma bifid, yellowish. Fruits schizocarp, ca. 4 mm long, consisting of 3–4 nutlets; nutlets ovoid, ca. 0.66 × 0.50 mm, foveate, brown.

Distribution. The species is native to a geographic range extending from Yemen and Eritrea southwards to Tanzania (Paton *et al*., 2019; POWO, 2025). In the present study, *C. prostratus* was recorded exclusively from cultivated populations in Bogor and Sumedang Regencies, West Java. However, this species appears to be widely cultivated beyond the areas surveyed in this study.

Specimens examined. INDONESIA. JAVA — **West Java**: West Bandung Regency, Parongpong, Cihideung village, culta, 19.X.2024, *ASD Irsyam 895* (FIPIA!); Bogor Regency, Dramaga, Ciherang village, culta, 21.XII.2025, *ASD Irsyam 1228* (FIPIA!); Sumedang Regency, Jatinangor, Cikeruh village, culta, 12.XII.2025, *ASD Irsyam 1227* (FIPIA!).

Vernacular names. *Kaktus bantal* (Bahasa Indonesia).

Uses. Ornamental hanging plant.

Note. During the present study, *C. prostratus* was represented predominantly by vegetative individuals, with reproductive structures rarely observed. Fruiting was observed only in individuals from Cihideung village. Despite the limited availability of flowering material, the species can be readily distinguished from other *Coleus* taxa occurring in Java based on vegetative characters. Diagnostic features include its prostrate, creeping herbaceous habit; small, fleshy leaves; and yellow-green leaf blades with serrate margins. Under conditions of high light intensity, the abaxial surface of the leaves may develop purplish pigmentation, as illustrated in Figure 1.

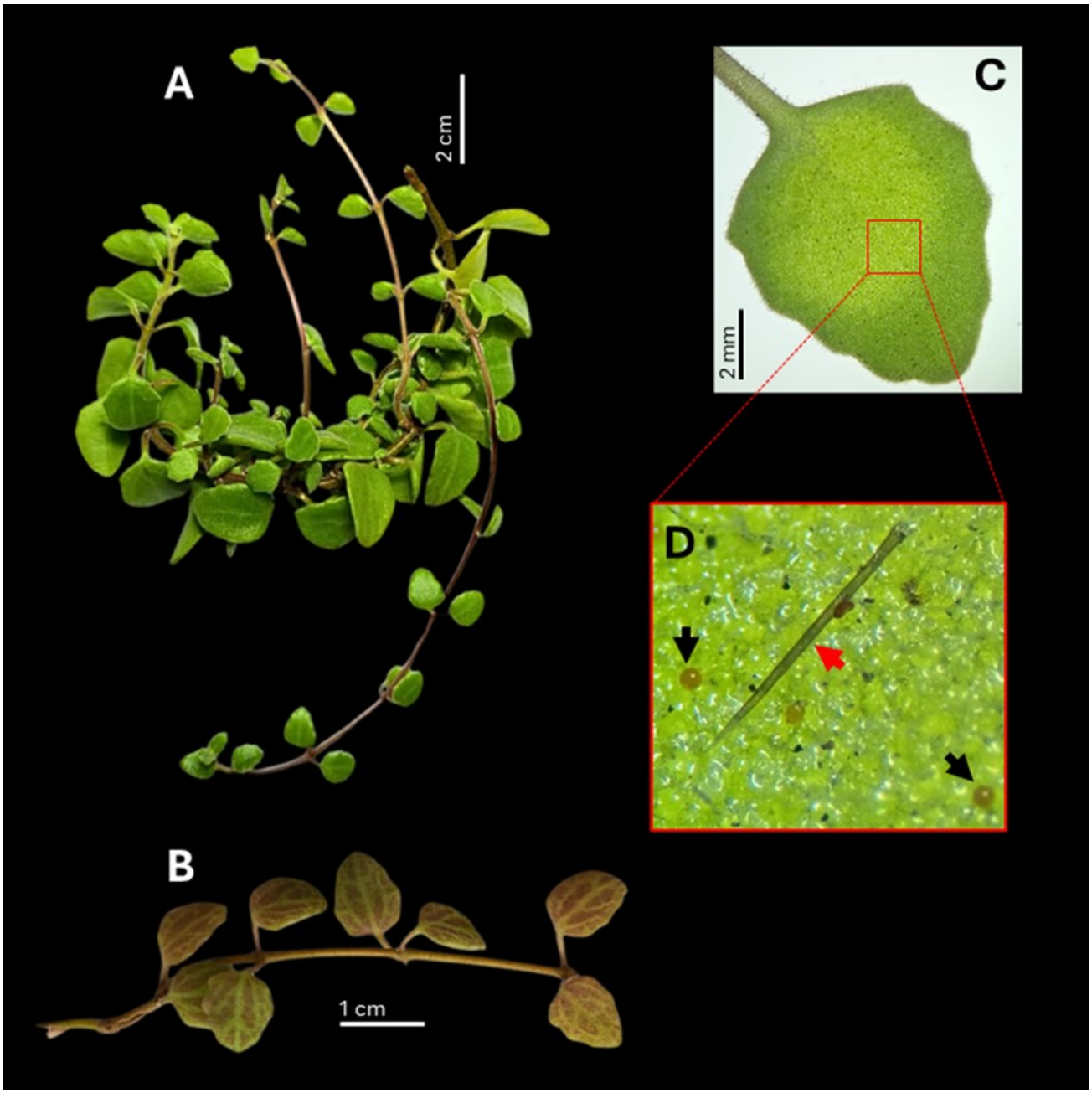

Figure 1. Vegetative morphology of *Coleus prostratus*. A. Habit, B. Leaf, showing adaxial surface, C. Exposed high light leaves, D. Sessile grandular trichomes (black arrows) and non-glandular trichome (red arrow).

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The occurrence of *C. prostratus* in Java represents an additional cultivated taxon that was not recorded in Flora of Java Vol. II. Its absence from this authoritative work is most plausibly explained by the timing of its introduction, which likely postdates the publication of Flora of Java, rather than by taxonomic oversight. The restriction of the species to cultivated settings further supports the interpretation that its presence in Java is the result of deliberate horticultural introduction rather than historical dispersal or early plant intro-

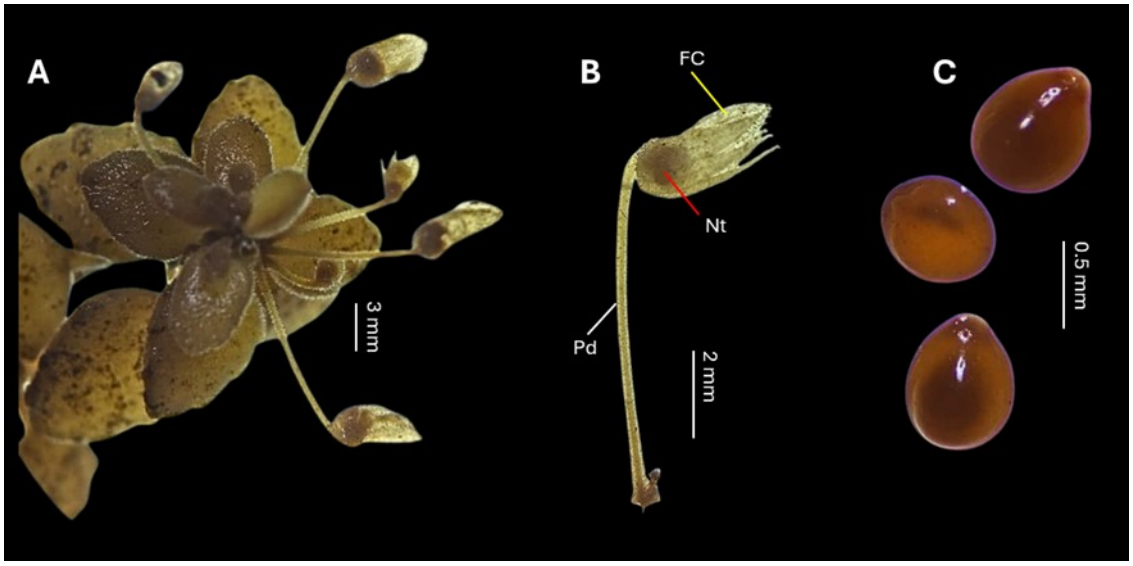

Figure 2. Reproductive structures of *Coleus prostratus*. A. Fruiting individual, B. Fruit (schizocarp) showing the pedicel (Pd), fruiting calyx (FC), and enclosed nutlets (Nt). C. Nutlets. Reproductive organs photographed from specimen ASDI 895.

At present, *C. prostratus* is known in Java only from cultivated contexts. Nevertheless, the documentation of this species is relevant in light of previous records of introduced *Coleus* taxa that have escaped cultivation and established outside managed environments, such as *C. monostachyus* (Irsyam & Mountara, 2018). The availability of vouchered records with precise locality data provides a reference point for future assessments of distributional changes, including the potential transition from cultivation to naturalization.

The deposition of herbarium voucher specimens is particularly important for introduced and cultivated taxa, as initial records often originate from non-natural habitats and may precede subsequent changes in establishment status. Well-documented vouchers allow for future taxonomic verification, facilitate floristic reassessment, and enable long-term monitoring of species occurrences. In the case of ornamental plants such as *C. prostratus*, comprehensive specimen documentation, including cultivation status and precise locality information, is essential for distinguishing transient cultivated records from early stages of establishment in the wild.

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