Leucas sivadasaniana, a New Species of Lamiaceae (*Leucas* sect. *Astrodon*) from Peninsular India

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ABSTRACT. The new species *Leucas sivadasaniana* Sunojkumar (Lamiaceae), collected from the Kudachadri Hills of Karnataka in Peninsular India, is described and illustrated. It is related to *L. beddomei* (Hooker f.) Sunojkumar & P. Mathew, *L. eriostoma* Hooker f., and *L. lamiifolia* Desfontaines, from which the new species differs in having broadly cuneate leaves, long and densely villous bracteoles, a nonciliate calyx mouth, and triangular teeth. This species is included in *Leucas* sect. *Astrodon* Bentham.

Key words: India, IUCN Red List, Karnataka, Lamiaceae, *Leucas*.

Worldwide, the genus *Leucas* R. Brown (Lamiaceae) comprises about 100 species and is found in the tropical regions of Africa, Arabia, and Asia (Sebald, 1980). In India, there are about 41 species—mostly distributed in the south—of which 23 are endemic. Two additional endemic species from this area were described recently by Sunojkumar and Mathew (2002) and Sunojkumar (2005). During collection for taxonomic studies of all the hitherto described Indian species, the author discovered a small population of *Leucas* at the margins of a mountain evergreen forest in the Kudachadri Hills of Karnataka, South India. This, when compared with specimens and types of related taxa, is confirmed to be a distinct species, which is described and illustrated here.

Leucas sivadasaniana Sunojkumar, sp. nov. TYPE: India. Karnataka: Udupi Dist., Kudachadri Hills, 1200–1400 m, 12 Feb. 2003, *P. Sunojkumar CU88126* (holotype, CALI; isotypes, K, MH, MO). Figure 1.

Leucadi beddomei (Hooker f.) Sunojkumar & P. Mathew, *L. eriostomati* Hooker f., et *L. lamiifoliae* Desfontaines arcte affinis, sed foliis basi late cuneatis, bracteolis triangularibus, villosis, non involucratis, ore calycis sine ciliis, lobo medio labii profunde emarginato differt.

Stout shrub, erect, 1–1.75 m tall, stem base 3–5 cm diam., ligneous with thick periderm, profusely branching; branches obtusely angular, grooved, long-tomentose to villous, hairs erect, silvery, 2–2.5 mm; internode 6–11 cm, tender stems densely villous. Leaves opposite, decussate; petiole 1.5–2.5 cm, villous; lamina lanceolate, 7–13 × 2.5–4 cm, 2.5× longer than broad, coriaceous, acute, base broadly or narrowly cuneate, margin serrate with 20 to 23 teeth, secondary veins 9 to 10, abaxial surface densely hispid, hairs 2 mm, spreading, mainly on the veins, adaxial surface villous, hairs 2 mm, glandular-punctate, margin ciliate. Inflorescence terminal, of 3 to 4 verticillasters, densely flowered, subglobose, 3–4 cm wide; bracteoles lanceolate, 1.3–1.5 × 0.2–0.25 cm, as long as calyx, many, densely villous, divergent below the inflorescence, not forming an involucre, apex acute, margin outside densely villous; flowers 20 to 30 per verticillaster, pedicels 1–2 mm. Calyx tubular, 1.3–1.5 cm, base narrowed, widest at middle, throat slightly constricted, outside fully tomentose, upper 1/2 outside ribbed at the veins, hispid, hairs 1–1.5 mm, inside upper 2/3 hispid with ca. 1 mm hairs, mouth straight, cilia absent; teeth 10, reflexed, alternately long and short, 2–3 mm, triangular, base 1–1.5 mm broad, tip acute, outside long-tomentose, hairs ca. 1 mm, inside short-pubescent; corolla white, 17–18 mm, tube 10–11 mm, included in the calyx tube, glabrous outside, inside a tuft of fleshy short hairs forming an annular ring ca. 7 mm from the corolla base; lower lip 8–9 mm, middle lobe 4–4.5 mm broad at free end, emarginate, lateral lobes ca. 2 mm broad; upper lip ca. 8 mm long, concave, strongly bearded with dense white, spreading hairs, margin ciliate; staminal filaments hairy at middle, upper stamen pair shorter than the lower pair; anthers deep red, ca. 1.8 × 0.57 mm; disc cup-shaped, ca. 1.5 mm tall, lobes almost equal; ovary locules ca. 1.2 mm, rounded on the upper side; style 15–16 mm, stigma bilobed, lower lobe ca. 0.7 mm, upper ca. 0.06 mm. Nutlets ca. 4 × 2 mm at middle, dark black, shining, oblong, base narrowed, top almost rounded, broadly trigonous in cross section.

Distribution and ecology. *Leucas sivadasaniana* is endemic to southern Western Ghat, from a population of less than 100 plants known from a single locality in the Kudachadri Hills of Udupi District in Karnataka. The new species is found in the margins of mountain evergreen forests at altitudes between 1200 and 1400 m.

doi: 10.3417/2006110

NOVON 18: 247–250. PUBLISHED ON 22 MAY 2008.

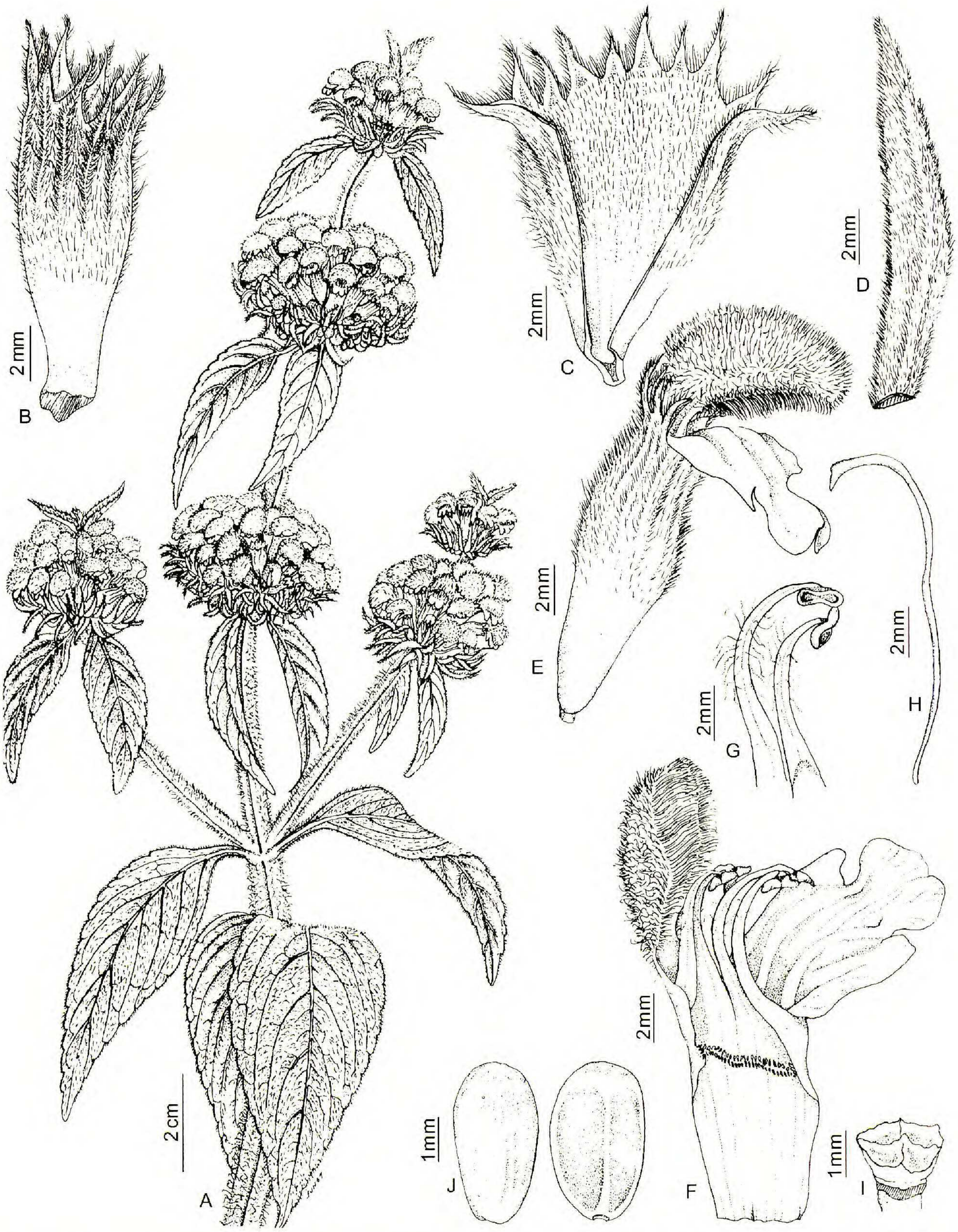

Figure 1. *Leucas sivadasaniana* Sunojkumar. —A. Habit. —B. Calyx. —C. Calyx split open. —D. Bracteole. —E. Flower. —F. Corolla split open. —G. Stamens. —H. Style. —I. Basal disc. —J. Nutlets. Drawn from the type *Sunojkumar CU88126* (CALI).

IUCN Red List category. Its occurrence in the Kudachadri Hills, inside the Mookambika Wildlife Sanctuary guarantees the preservation of this species in the near future. Based on IUCN Red List criteria (IUCN, 2001), *Leucas sivadasaniana* can be given the conservation status of Critically Endangered (CR B1ab[ii,iii]) due to its restricted occurrence area, habitat loss, and population size.

Phenology. Observed as flowering in December; fruiting from January to March.

Etymology. The species is named after M. Sivadasan (1948–), Professor of Botany, University of Calicut, Kerala, India, in appreciation for his contributions to plant taxonomy.

Discussion. *Leucas sivadasaniana* is found over a 10-km^2 area, in the Kudachadri Hills in Mookambika Wildlife Sanctuary, and no related taxa are reported from this area. In its shrubby nature, it is similar to other South Indian endemic species such as *L. beddomei*, *L. eriostoma*, and *L. lamiifolia*, which are

Table 1. Comparison between *Leucas sivadasaniana* and related species.

Character	*L. lamiifolia*	*L. sivadasaniana*	*L. eriostoma*	*L. beddomei*
Habit	shrub, 1–1.5 m tall	stout shrub, 1–1.75 m tall	subshrub, 0.45–1 m tall	shrub, 0.75–1 m tall
Lamina	ovate, 6–13 × 3–6 cm	lanceolate, 7–13 × 2.5–4 cm	linear-lanceolate, 6–9 × 1–1.5 cm	elliptic, 5–10 × 2–3 cm
Leaf base	rounded to cordate	broadly to narrowly cuneate	narrowly cuneate	narrowly cuneate
Bracteoles	bent toward the flowers, involucrate, thin, margin ciliate, outside hispid, 10–13 × 1.5 mm	diverging below, not involucrate, thick, margin outside densely villous, 13–15 × 2–2.5 mm	erect, not involucrate, thin, margin ciliate, 6–8 × 0.3–0.5 mm	erect, not involucrate, thin, margin ciliate, 7–8 × 1 mm
Calyx	0.8–1 cm, thin, inside glabrous	1.3–1.5 cm, thick, fleshy, inside upper 2/3 hispid	0.5–0.6 cm, upper 1/2 thin reticulate, lower 1/2 thick leathery, inside glabrous	0.7–0.8 cm, thick, fleshy, inside glabrous
Calyx mouth	ciliate with long hairs turned toward the mouth, rim annulate with a thick ring of veins	not ciliate, open, not annulate	ciliate with long hairs turned toward the mouth, rim annulate	ciliate with short hairs, rim annulate
Calyx teeth	linear, midvein not distinct, 2–2.5 × 0.5 mm	triangular, midvein thick, ribbed, 2–3 mm, base 1–1.5 mm broad	spinescent, 0.6–0.8 × 0.5 mm	triangular, 0.9–1 × 0.5 mm
Corolla lower lip, middle lobe	fan-shaped, 8–8.5 × 5–6 mm	emarginate, a deep fissure equally dividing the lobe, 8–9 × 4–4.5 mm	emarginate with equal lobes, 4–4.5 × 2.5–3 mm	emarginate with equal lobes, 3.5–4 × 2–2.5 mm
Corolla upper lip	golden brown	cottony white	silvery white	golden yellow
Corolla tube inside (above annulus)	glabrous	glabrous	with dense, fleshy, longitudinal rows of hairs	with dense, fleshy, longitudinal rows of hairs

found ca. 250–490 km away, in very restricted distributions. However, *L. sivadasaniana* is distinguished by unique floral and vegetative characters, and possesses the largest flowers and bracteoles recorded in the genus. A number of herbaria (CAL, CALI, K, MH, SKU, TBGT) where other plant specimens from this area are deposited were visited to confirm the novelty of this taxa. Due to similar characters such as shrubby habit, inflorescence position toward the branch tip, and the tubular calyx, this new species is included in *Leucas* sect. *Astrodon* Bentham. It can be easily distinguished from related species by the characters shown in Table 1.

Acknowledgments. I am very grateful to Philip Mathew, Professor of Botany, University of Calicut, for his valuable guidance during my Ph.D. work; to A. K. Pradeep, Curator of Calicut University Herbarium, for his help and suggestions; and to the Director and Deputy Directors of the Botanical Survey of India Regional Stations for granting permission to examine specimens. I am extremely thankful to Oskar Sebald, Staatlichen Museum für Naturkunde, Stuttgart, Germany, for his valuable suggestions, constant encouragement, and an early review of the manuscript. I also thank the International Association for Plant Taxonomy, Vienna, for research grant support.

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