

TWO NEW SPECIES OF *ERIOCAULON* (ERIOCAULACEAE) FROM INDIA

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Two new species of *Eriocaulon* L. (Eriocaulaceae) from India, *E. malabaricum* Pradeep & Nampy and *E. pykarensis* Nampy & Manudev, are described, illustrated and compared with *E. sollyanum* Royle and *E. ansarii* Pradeep & Sunil, respectively.

Keywords. Eriocaulaceae, *Eriocaulon malabaricum*, *Eriocaulon pykarensis*, India, new species.

INTRODUCTION

The genus *Eriocaulon* L. (Eriocaulaceae) with about 400 species (Mabberley, 2008) is distributed in tropical and subtropical regions of the world. Ansari & Balakrishnan (2009) reported 85 species from India. In addition two more species have been described from peninsular India, namely *Eriocaulon epedunculatum* Potdar *et al.* and *E. baramaticum* Shimpale *et al.* (Yadav *et al.*, 2008; Shimpale *et al.*, 2009). During a recent scientific survey in different parts of southern India, material of this genus was collected by the authors that on critical examination was revealed to be new species. These are described and illustrated here.

SPECIES DESCRIPTIONS

***Eriocaulon malabaricum* Pradeep & Nampy, sp. nov. Figs 1, 2A–B.**

Eriocauloni sollyano Royle affinis, a quo imprimis differt receptaculo cylindrico, petalis masculinis glabris, sepalis femineis dimorphis, seminum appendiculis 1–3 e parietibus transversalibus radialibus. – Type: India, Kerala, Wayanad District, Sulthan Bathery, Kuppadi hills, 920 m, on marshy soil, 9 i 2010, *Sheba M. Joseph* 2729 (holo CALI; iso DEV, E).

Acaulescent herbs. *Rootstock* up to 1.5 cm. *Leaves* few, linear, c.4 × 0.2 cm, glabrous. *Peduncles* many, up to 16 cm long, glabrous, striate; sheath up to 2.5 cm long, glabrous; limb entire, ovate or rounded at apex. *Heads* ovate or hemispherical, 3–4 × 2–3 mm. *Receptacles* cylindric, pilose. *Involucral bracts* obovate, c.2.15 × 0.8 mm, glabrous, acuminate at apex. *Floral bracts* obovate, c.1.8 × 1.5 mm, distally crenate to entire,

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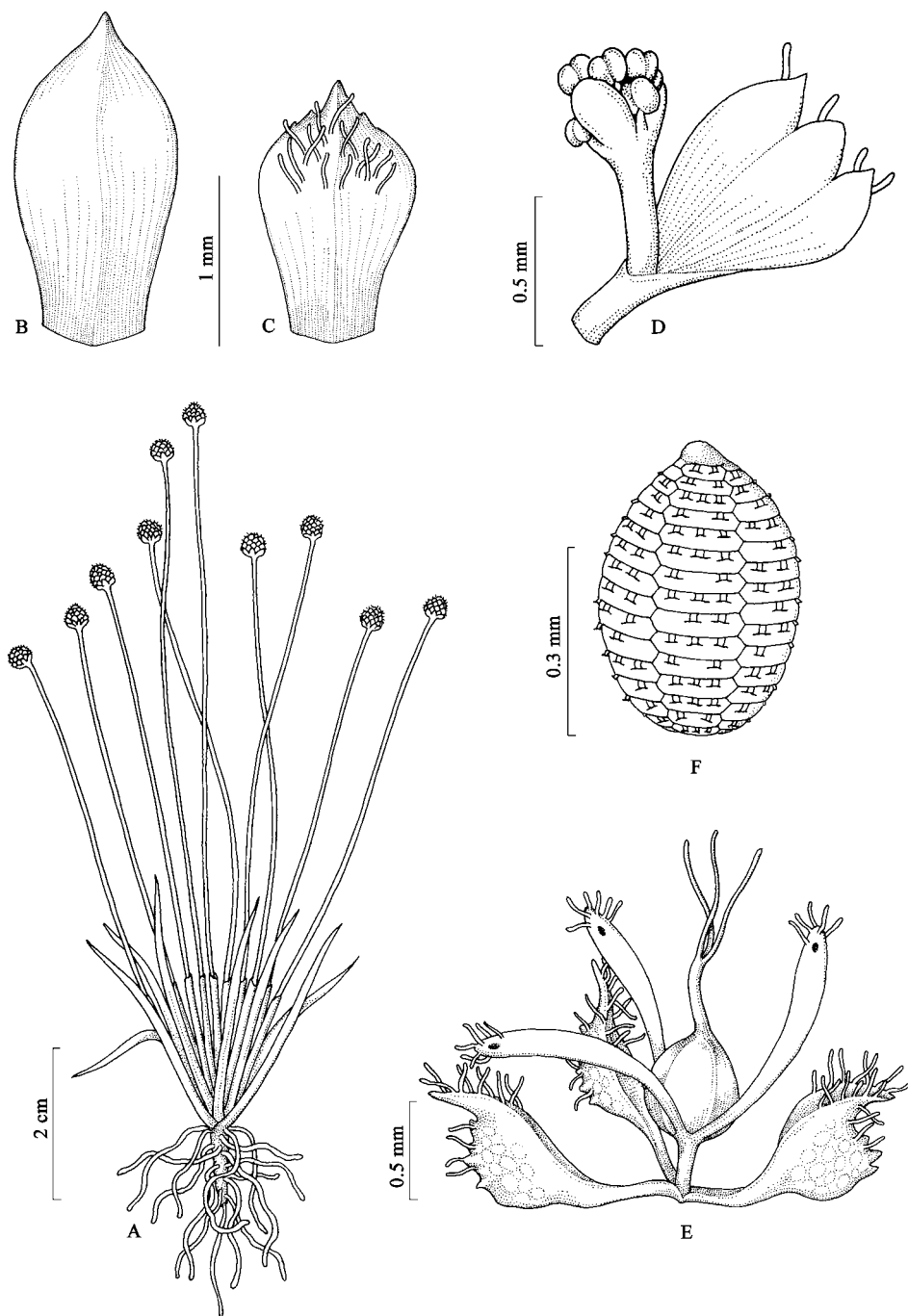


FIG. 1. *Eriocaulon malabaricum* Pradeep & Nampy. A, habit; B, involucral bract; C, floral bract; D, male flower; E, female flower; F, seed. Drawn by Manudev from the holotype.

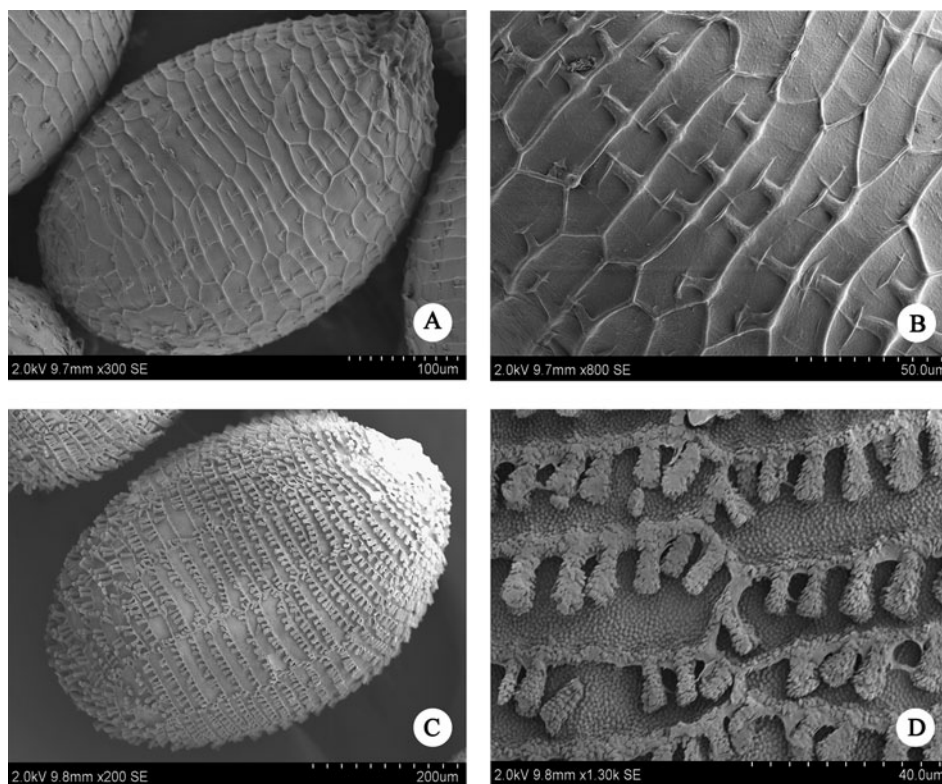


FIG. 2. SEM micrographs of the seed-coat of *Eriocaulon malabaricum* Pradeep & Nampy and *E. pykarense* Nampy & Manudev. A–B. *E. malabaricum*: A, entire seed; B, detail of seed-coat. C–D. *E. pykarense*: C, entire seed; D, detail of seed-coat.

shortly acuminate, hoary dorsally towards apex. *Male flowers*: Pedicels c.0.4 mm long, glabrous. Sepals 3, connate; spathe obovate, c.1.4 × 0.75 mm; lobes acute or obtuse, glabrous or occasionally hoary towards apex. Corolla tube c.0.8 mm long. Petals 3, minute, equal, ovate-obovate, glabrous, without a black gland. Stamens 6; filaments c.0.25 mm long; anthers black. *Female flowers*: Pedicels 0. Sepals 3, free, dimorphic, oblanceolate, margins distally ciliate, acute at apex; laterals 1.2–1.5 × 0.35–0.45 mm, distinctly keeled, irregularly dentate at back; medial 1–1.2 × 0.25–0.35 mm, not distinctly keeled. Petals 3, equal, oblong-spathulate, 1.25–1.5 × 0.1–0.15 mm, obtuse, hoary towards apex, with a black gland. Ovary sessile, broadly ovate, 0.5 × 0.4 mm; style 0.4 mm long, 3-fid at apex. *Seeds* ovoid, seed-coat cells transversely elongated, aligned in vertical rows; appendages 1–3 from transverse radial cell walls, setiform, dilated at apex.

Distribution. Known only from Wayanad District in Kerala.

Habitat and ecology. Usually found growing along marshy areas.

Phenology. December–March.

Etymology. The species is named after ‘Malabar’, one of the floristically rich regions in southern India, which includes the type locality, Kuppadi hills.

Taxonomic note. *Eriocaulon malabaricum* Pradeep & Nampy is allied to *E. sollyanum* Royle but differs in having a cylindrical receptacle, glabrous male petals without a black gland, dimorphic female sepals and 1–3 seed appendages arising from the transverse radial cell walls as opposed in *E. sollyanum* to a hemispherical or ovoid receptacle, hoary male petals with a black gland, monomorphic female sepals and 3–6 seed appendages arising from transverse radial cell walls. A more detailed morphological comparison of these two species is given in Table 1.

Additional specimens examined. INDIA. Kerala, Wayanad District, Sulthan Bathery, Kuppadi hills, 920 m, 10 ii 2010, in marshy areas, *Sheba M. Joseph & Santhosh Nampy* 3011 (DEV); Muthanga, 800 m, *Ratheesh Narayanan* s.n. (CALI).

***Eriocaulon pykarens* Nampy & Manudev, sp. nov. Figs 2C–D, 3.**

Eriocauloni ansarii Pradeep & Sunil affinis, a quo imprimis differt sepalis masculinis incanis, petalis masculinis glandulis, sepalis femineis ciliatis, seminum appendiculis 9–11 e parietibus transversalibus radialibus et 2 e parietibus verticalibus radialibus. – Type: India, Tamil Nadu, Nilgiris District, Pykara, 1420 m, on wet soil, 23 ii 2010, *Santhosh Nampy* 2757 (holo CALI; iso DEV, E).

Acaulescent herbs. *Rootstock* up to 5 cm long. *Leaves* acicular, 2–7 × 0.2–0.6 cm, glabrous. *Peduncles* 1–3(–7), 6–26 cm long, glabrous, striate; sheath up to 5 cm long, glabrous; limb entire, acute to acuminate at apex. *Heads* hemispherical, up to 5 mm across, black. *Receptacle* hemispherical, pilose. *Involucral bracts* narrowly to broadly obovate, 1.75–2 × 1.3–1.5 mm, spreading or reflexed, glabrous, rounded at apex. *Floral bracts* obovate, c.2.5 × 1.5 mm, acuminate, hoary dorsally towards apex. *Male flowers:* Pedicels c.0.6 mm long, glabrous. Sepals 3, connate; spathe

TABLE 1. Comparison between *Eriocaulon malabaricum* and *E. sollyanum*

Character	<i>Eriocaulon malabaricum</i>	<i>Eriocaulon sollyanum</i>
Rootstock	Present	Absent
Leaves	c.4 × 0.2 cm	c.9 × 0.3 cm
Receptacle	Cylindric, pilose	Hemispherical or ovoid, glabrous or sparsely pilose
Involucral bracts	Obovate, acuminate at apex	Oblong-spathulate, obtuse at apex
Floral bracts	Obovate	Oblanceolate-cuneate
Male flowers: Petals	Glabrous, without a black gland	Glabrous or sparsely hoary, with a black gland
Female flowers: Sepals	Dimorphic, keels irregularly dentate	Monomorphic, keels entire
Seed-coat appendages	1–3 from transverse radial walls	3–6 from transverse radial walls

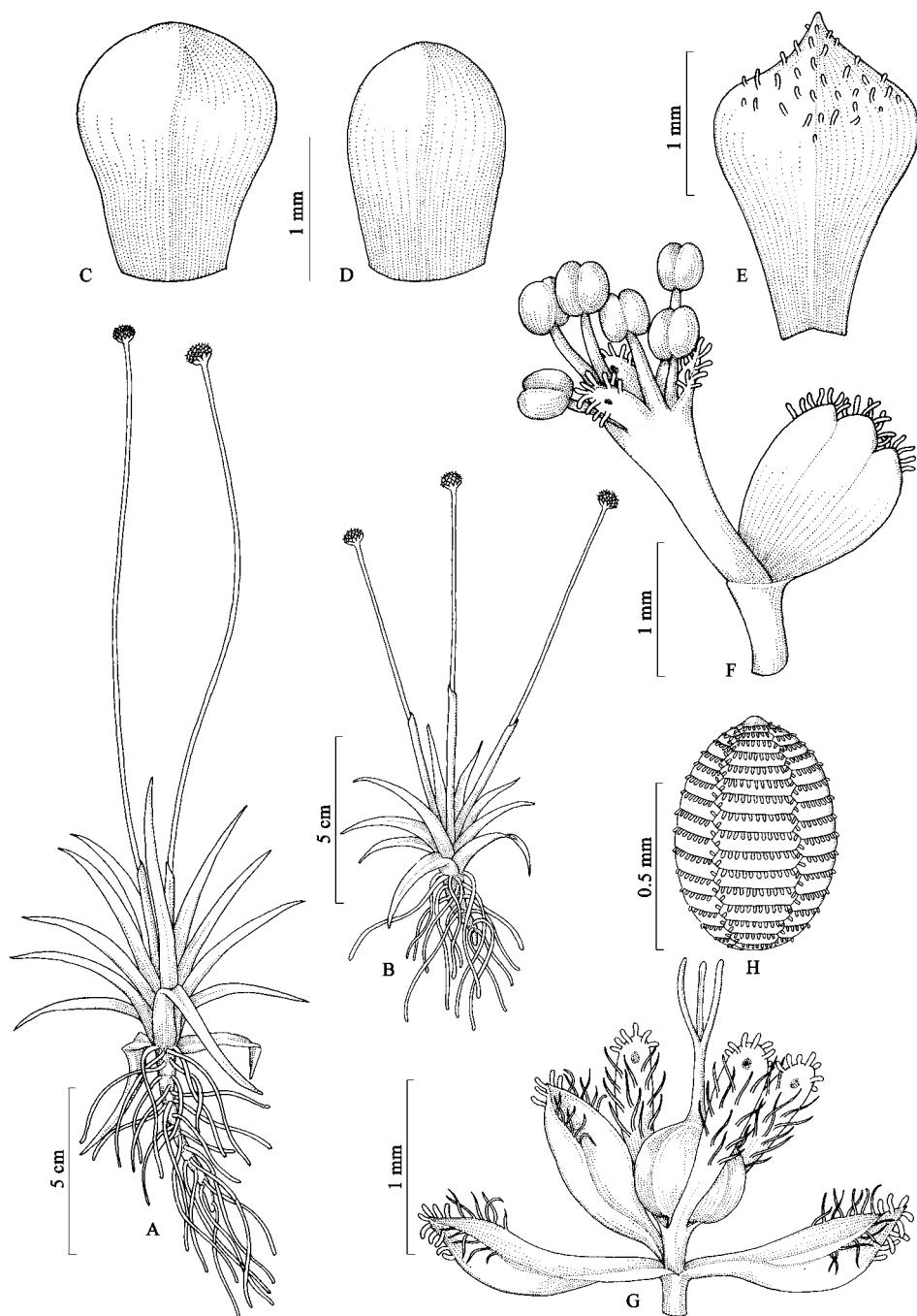


FIG. 3. *Eriocaulon pykarensis* Nampy & Manudev. A–B, habit; C–D, involucre bracts; E, floral bract; F, male flower; G, female flower; H, seed. Drawn by Manudev from the holotype.

obovate, 1.2–1.4 × 0.8–1 mm; lobes acute or obtuse, hoary towards apex. Corolla tube 1.5–2 mm long. Petals 3, minute, equal, obovate, c.0.5 × 0.25 mm, with a black gland, hoary towards apex. Stamens 6; filaments c.0.75 mm long; anthers black. *Female flowers*: Pedicels 0.4 mm long. Sepals 3, free, black, oblanceolate, 1.75–2 × 0.6–0.75 mm, not distinctly keeled, margins ciliate, acute, hoary along keels and apex. Corolla tube c.0.4 mm long. Petals 3, equal, spatulate, 1.5–1.75 × 0.25–0.38 mm, obtuse, pilose, hoary towards apex, with a black gland. Ovary sessile or subsessile, widely ovate, c.0.9 × 0.8 mm; style 0.75 mm long; stigma 0.75 mm long, barbate. *Seeds* elliptic, seed-coat cells transversely elongated, aligned in vertical rows; appendages 9–11 from transverse radial cell walls and 2 from vertical radial cell walls, setiform, truncate at apex.

Distribution. Known only from the type locality.

Habitat and ecology. Marshy places in grasslands.

Phenology. December–February.

Etymology. The species is named after the type locality Pykara, in southern India.

TABLE 2. Comparison between *Eriocaulon pykarensense*, *E. ansarii* and *E. sollyanum*

Character	<i>Eriocaulon pykarensense</i>	<i>Eriocaulon ansarii</i>	<i>Eriocaulon sollyanum</i>
Rootstock	Present, up to 5 cm long	Present, up to 1.2 cm long	Absent
Leaves	Acicular, 2–7 cm long	Acicular, up to 1 cm long	Linear, c.9 cm long
Floral bracts	Hoary dorsally towards apex	Not hoary	Hoary dorsally towards apex
Male flowers:			
– Sepals	Hoary towards apex	Not hoary	Hoary towards apex
– Corolla tube	1.5–2 mm long	c.0.5 mm long	0.5–0.75 mm long
– Petals	Hoary towards apex, with a black gland	Not hoary, without any black gland	Glabrous or sparsely hoary, with a black gland
Female flowers:			
– Sepals	Not distinctly keeled, hoary along back and apex, margins ciliate	Not keeled, not hoary, margins not ciliate	Keeled, hoary along back, margins not ciliate
– Petals	Spatulate, pilose, with a black gland, hoary towards apex	Elliptic, pilose, with or without black gland, not hoary	Spatulate, not pilose, with a black gland, hoary towards apex
Seed-coat appendages	9–11 from transverse radial walls, 2 from vertical radial walls, truncate at apex	3 or 4 from transverse radial walls, truncate at apex	3–6 from transverse radial walls, dilated at apex

Taxonomic note. *Eriocaulon pykarensense* Nampy & Manudev is allied to *E. ansarii* Pradeep & Sunil but differs in having hoary male sepals, glandular male petals, ciliate female sepals, 9–11 seed-coat appendages arising from transverse radial cell walls and 2 seed-coat appendages arising from vertical radial cell walls as opposed to glabrous male sepals, non-glandular male petals, glabrous female sepals and 3 or 4 seed-coat appendages arising from transverse radial cell walls in *E. ansarii*.

Ansari (pers. comm. dated 19 May 2010) assigned our material to *E. trilobum* Buch.-Ham. ex Körn. which is conspecific with *E. sollyanum* Royle. However, *Eriocaulon pykarensense* differs from *E. sollyanum* in having c.5 cm long rootstock, acicular leaves, projecting male flowers, pilose female petals and 9–11 seed appendages arising from transverse radial cell walls and 2 from vertical radial cell walls as opposed to the absence of a rootstock, linear leaves, male flowers equalling the head, glabrous female petals and the number of seed appendages arising from transverse radial cell walls not exceeding 6 in *E. sollyanum*. A more detailed morphological comparison of these three species is given in Table 2.

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