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Research article

ERIOCAULON KANNURENSE (ERIOCAULACEAE), A NEW SPECIES FROM KERALA, INDIA

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ABSTRACT: *Eriocaulon kannurensense* Sunil, Ratheesh & Nandakumar (Eriocaulaceae), a new species from the Kannur District, Kerala, India, is described and illustrated. The species is allied to *Eriocaulon setaceum* and *E. capillus-naiadis* in its submerged aquatic habit and elongated stem bearing filiform leaves, but differs mainly in having split sheath limb, white coloured heads and anther and isodiametric cells of seed coat without appendages.
Key words: *Eriocaulon*, Eriocaulaceae, India, Kannur, Kerala, Laterite hill

INTRODUCTION

The genus *Eriocaulon* L. (Eriocaulaceae) with about 400 species [7] is distributed in tropical and subtropical regions of the world. Linnaeus [5], while establishing this genus described four species of which three were from India. Ma *et al.* (2000) made a treatment for Eriocaulaceae in China and provided a detailed account of 35 species including a submerged aquatic herb. Ansari & Balakrishnan (1994) in their revision of Eriocaulaceae recognised 65 species for India. However, novelties are being added in recent years [2, 4, 9, 10, 11, 1 revised their earlier work and provided a detailed account of 80 species in India. Subsequently a few more species have been described from Peninsular India such as *E. baramaticum* [13], *E. epedunculatum*, *E. pykarensense* [8], and *E. wayanadense* [15].

During a recent floristic exploration in the laterite hillock in the midland of Kannur District, Kerala, specimens of *Eriocaulon* L. were collected that belongs to the section IV proposed by [1]. The plants of this section are submerged aquatic herbs with an elongated stem bearing filiform leaves throughout. *E. capillus-naiadis*, *Eriocaulon melanocephalum* and *E. setaceum* are the only three submerged aquatic species found in the World. The present one is an addition to this section, from the foot hills of the Western Ghats of India, described and illustrated here.

TAXONOMIC TREATMENTS

Eriocaulon kannurensense Sunil, Ratheesh & Nandakumar *sp. nov.* Fig. 01, Plates 01 & 02.

Caules ad 25 cm longi. Limbus vaginalis apicaliter lobis 2 vel 3 acutis fissus. Capitula alba. Petala apicaliter incana glandula lutea. Antherae albae. Florum femineorum sepala apicaliter et secus margines sparse pubescentia. Semina testa cellulis isodiametricis non seriatis sine appendicibus.

Type: India. Kerala. Kannur District: Kanayi Kanam, alt. 200m, 17 Sept. 2011, C. N. Sunil, M. K. Ratheesh Narayanan & M. K. Nandakumar MSSH 3671 (holotype CALI; isotypes: MH, MSSH).

Submerged aquatic caulescent herbs; stems up to 25 cm long. Leaves cauline, 6–11 x 0.05–0.075 cm, filiform, semiterete, sheathing and hyaline at base, acuminate at apex, glabrous, 1-nerved. Peduncles many from the apex of the stem, 6–6 cm long, virgate, glabrous. Sheaths 2.5–6 cm long, glabrous; limb apex split into 2 or 3 acute lobes. Heads 4–6 mm across, spherical or ovoid, white. Receptacles 2.5–3 x ca. 2 mm, ovoid, sparsely pilose. Involucral bracts spreading, 2–2.5 x 1–1.5 mm, oblong-obovate, obtuse, entire or incised along margins, glabrous, chartaceous, straw-coloured. Floral bracts 2–2.75 x 0.75–1.25 mm, oblanceolate, acute to acuminate, chartaceous, white, hoary dorsally towards apex. Male flowers: Pedicels ca. 0.25 mm long. Sepals 3, obovate-cuneate, connate into a spathe of ca. 2 x 2 mm, 3-lobed with obtuse lobes, hoary towards apex, white. Stipe of corolla 1–1.5 mm long. Petals 3, unequal, oblong, obtuse, white, hoary at apex with a yellow gland; lateral petals ca. 0.5 mm long; odd one 0.75–1 mm long. Anthers 6, globose, white; filaments straight, unequal, 0.5–1 mm long, white. Female flowers: Pedicels 0.3–0.5 mm long. Sepals 3 or 2, similar or dissimilar; the two lateral ones linear-falcate, conduplicate, acute, 1.5–2 x 0.25–0.5 mm, sparsely hairy along margins and apex, hyaline; the middle one flat, linear, acuminate, 0.3–1.5 x ca. 0.25 mm, with few hairs at apex, hyaline or rarely absent. Petals 3, free, spatulate-linear or oblanceolate, obtuse, 1.75–2 x 0.25–0.4 mm, white, hoary at apex with a black gland in each, sparsely pubescent along margins. Shortly stipitate between sepals and petals. Ovary sessile, ovoid or globose, trigonous, 0.25–0.4 mm long; style 3-fid, 1.5–1.75 mm long. Seeds oblong-ellipsoid, obtuse, 0.2–0.3 x ca. 0.2 mm, purple, cells of seed coat isodiametric, not in any specific rows; appendages absent.

Note: *Eriocaulon kannureense* Sunil, Ratheesh & Nandakumar belongs to the submerged aquatic group of *Eriocaulon* species. This species resembles *Eriocaulon setaceum* and *E. capillus-naiadis* in having submerged aquatic habit and elongated stem bearing filiform leaves throughout, but differs by its sheath limb split into 2 or 3 acute lobes, white heads and anthers, petals with a yellow gland at apex, sepals of female flowers sparsely hairy on apex and along margins, and seed coat with isodiametric cells without appendages. *E. capillus-naiadis* is having a black gland on the petals and transversely elongated appendaged seed coat in contrast to the yellow gland and isodiametric smooth seed coat in *Eriocaulon kannureense*. A comparison of salient characters of *Eriocaulon kannureense* and related species is shown in Table 1.

Additional specimens examined: India. Kerala. Kannur District: Kanayi Kanam, alt. 200m, 24 Nov. 2011, M. K. Ratheesh Narayanan & M. K. Nandakumar MSSH 4012 (*paratype*: MSSH).

Phenology: Flowering September to February.

Etymology: The specific epithet is derived from the type locality, Kannur District in Kerala State, India.

Habitat & Distribution: *Eriocaulon kannureense* grows in large colonies at an altitude of c. 200 m, in perennial streams of laterite hillocks. It known only from the Kanayi Kanam of Kannur District in Kerala, and hence endemic. The laterite hillocks in this area facing high degree of danger of habitat degradation due to ignorance by the public and administrators. The areas are being heavily converted to building sites, mining grounds, dumping sites, etc. The uncontrolled tourist activities are also damaging this fragile ecosystem.

Table 1. Diagnostic morphological characters of *Eriocaulon kannureense* sp. nov. and related species

<i>Eriocaulon kannureense</i>	<i>E. setaceum</i>	<i>E. capillus-naiadis</i>
Stem up to 25 cm long	Stem up to 40 cm long	Stem up to 40 cm long
Sheath limb split into 2 or 3 acute lobes	Sheath limb entire	Sheath limb entire
Heads white	Heads pale black or grey	Heads black or straw coloured
Petals hoary at apex with a yellow gland	Petals glabrous without any glands	Petals sparsely pubescent with a black gland
Anthers white	Anthers black	Anthers black
Sepals of female flowers sparsely hairy on apex and along margins	Sepals of female flowers glabrous	Sepals of female flowers sparsely hoary along margins
Cells of seed coat isodiametric, not in any specific rows, appendages absent	Cells of seed coat transversely elongated, appendages present	Cells of seed coat transversely elongated, appendages present



PLATE. 01 *Eriocaulon kannurensis* Sunil & Ratheesh. a. A population, b. Habit
c. Inflorescence, d. Single floret

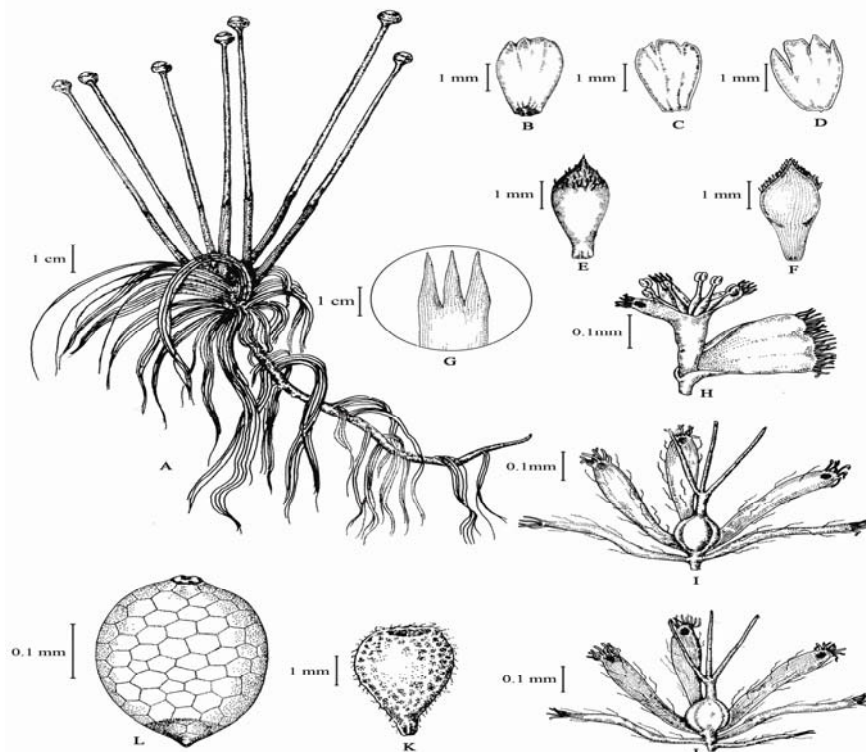


Fig. 01. *Eriocaulon kannurensis* Sunil, Ratheesh & Nandakumar. A. Habit, B, C & D. Involucral bracts, E & F. Floral bracts, G. Sheath, H. Male flower, I & J Female flowers, K. Receptacle, L. Seed

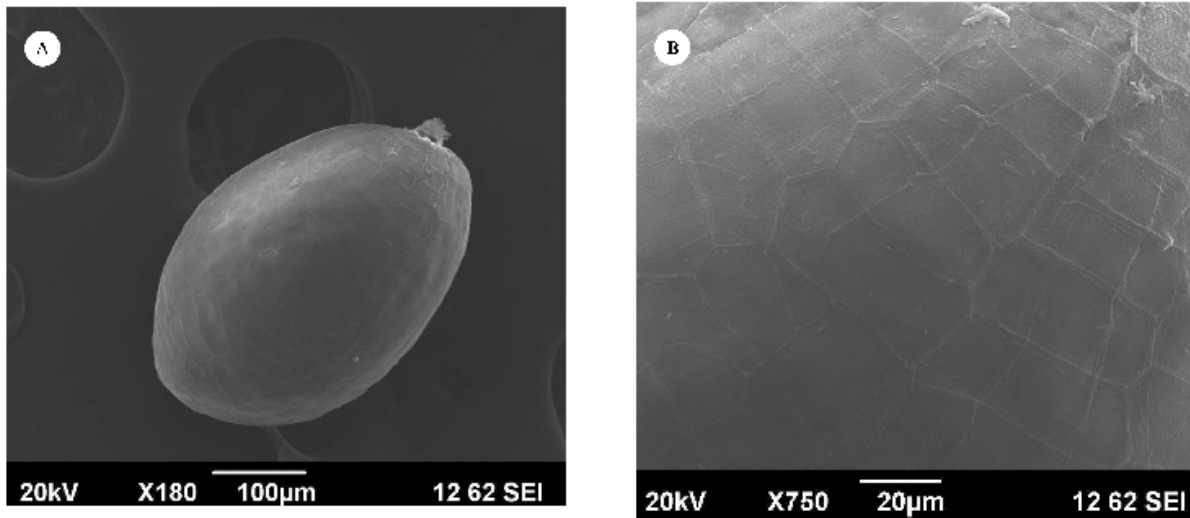


Plate 02: *Eriocaulon kannurensis* Sunil, Ratheesh & Nandakumar. Scanning electron micrographs of seed. A. seed, B. Enlarged view of seed coat.

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