



GENUS *ERIOCAULON* L. IN THE SEASONALLY WATER-LOGGED GRASSLANDS OF MUDUMALAI TIGER RESERVE – NEW DISTRIBUTIONAL RECORDS

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ABSTRACT: Genus *Eriocaulon* L. is characterised as acaulescent herbs with rosettes of leaves and flowers clustered into capitate inflorescences. This genus is widely distributed, with the centers of diversity occurring in the tropics. A study carried out to document the *Eriocaulon* L. species in the seasonally water-logged grasslands of Mudumalai Tiger Reserve resulted in new distributional records for the state of Tamil Nadu, India and for the district of Nilgiris in the state of Tamil Nadu.

Key words: *Eriocaulon*, wetlands, seasonally water-logged grasslands, Mudumalai Tiger Reserve.

INTRODUCTION

The genus *Eriocaulon* L. is the only representative of family Eriocaulaceae in India. The genus *Eriocaulon* L. was established by Carl Linnaeus in 1753, recognizing four species of *Eriocaulon* L. of which three were from India [8]. During nineteenth century many workers (Brown (1810), Martius (1832), Wallich (1832), Royle (1839), Kunth (1841) Dalzell (1851), Griffith (1851), Steudel (1854-55), Koernicke (1856 & 1867)) added more species to the genus, which were later consolidated and described by J.D Hooker (1893) in “The Flora of British India”. Of the 43 species described for the then British India, 34 were considered to occur within the present boundaries of India [6]. Ruhland (1903) recognized 47 species from India in his monograph [15]. Fyson (1919-1922) described 51 species for the British India [3]. Later Ansari & Balakrishnan (1994, 2009) recognized 65 species during the revision of Indian Eriocaulaceae [1]. With the publication of their work in 1994 there was a better understanding of the genus and soon many as 16 new species were added [4,5,7,11,12,13,14,19,21]. After the publication of their revised edition in 2009 there have been many more new reports (Yadav *et al.*, (2008)[22]; Shimpale *et al.*, (2009,2010)[16,17], C.P. Vivek *et al.* [20], Pradeep, Nampy & Manudev [9,10], P.Biju *et al.* [2], M. M. Swapna *et al.* [18].

Mudumalai Tiger Reserve lies between 110 32' & 110 43' N and 76 0 22' & 76 0 45' in Nilgiri district of Tamil Nadu bordering the states of Kerala on its west and Karnataka on its north. It is spread over an area of 321 Km² with an altitude of 1000 m and having a rainfall gradient of 50 to 200 cm/ annum from east to west. The reserve has open grasslands interspaced between the thick forests which remain water-logged during the second half of the year.

METHODS

During the study of flora of the seasonally water-logged grasslands of Mudumalai Tiger Reserve it was observed that there was a good representation of the genus *Eriocaulon* L. in these wetlands. By survey method all the species existing in these wetland were identified and documented.

RESULTS & DISCUSSION

The study resulted in documentation of nine species of *Eriocaulon* L. inhabiting the seasonally waterlogged grasslands. The species identified were *E.conica* Fisch., *E. hamiltonianum* Mart., *E. heterolepis* Steud., *E. longicuspe* Hook.f., *E. quinquangulare* L., *E. robustobrownianum* Ruhl, *E. robustum* Steud., *E. setaceum* L. and *E. xeranthemum* Mart. Literature review revealed that *E. hamiltonianum* Mart., *E. heterolepis* Steud. and *E. setaceum* L. are new distributional record for the state of Tamil Nadu and *E. longicuspe* Hook.f. and *E. xeranthemum* Mart. new distributional record for the district of Nilgiris.

The new records are described as under.

Eriocaulon hamiltonianum Mart. in N. Wallich, Pl. Asiat.Rar.3: 29.1832; Hook. f., Fl. Brit. India 6: 579. 1893 (quoad synonym under *E. oryzetorum*); Ruhland in Pflanzenr. (Engler) IV 30(13): 107. 1903 [15]; Fyson in J. Indian Bot 2: 313. 1921; R. Ansari & N.P.Balakr., Eriocaulaceae India 114. 1994. [1].

Acaulescent herb; rootstock absent. Leaves rosulate, up to 6 x 0.5cm, glabrous; sheaths up to 3.5cm long. Male flowers: Sepals 2, free, Petals 3, anthers 6, glabrous, black. Female flowers: Sepals 2, free, Petals 3, free, sub-equal, linear, hyaline, without any black gland. Seed ovoid-ellipsoid, pale yellow; cells on seed coat transversely elongated, aligned in vertical rows; appendages in the form of a pair of continuous ribbon-like bands from transverse and vertical radial walls conforming to its length.

Fl. & Fr.: September – November

Distribution -World: C. & NE. India to Thailand, New Guinea.

Notes: This species is known to be distributed in the Central and North East of India. C.D.K Cook has reported this species from Karnataka in his “Aquatic and Wetland Plants of India”. This report is a new record for Tamil Nadu.

Eriocaulon heterolepis Steud, Syn. Pl. Glumac. 2: 271.1855; Hook.f, Fl. Brit. India 6: 585.1893; Ruhland in Pflanzenr. (Engler) IV 30 (13): 74. 1903; Fyson in J. Indian Bot 3:16. 1922; R. Ansari & N.P.Balakr., Eriocaulaceae India 44. 1994.

Acaulescent herb; rootstock absent. Leaves rosulate, up to 15 x 0.8 cm, glabrous; sheaths up to 6 cm long. Male flowers: Sepals connate into a spathe; Petals 3, equal, with a black gland; anthers 6, black. Female flowers: Sepals 3, free, unequal, black; Petals 3, spatulate, not clawed, without or with a black gland. Seed oblong; cells of seed coat transversely elongated, aligned in vertical rows; appendages 5-7 from the transverse radial walls, setiform, dilated at apex.

Fl. & Fr.: October – March

Distribution -World: SW. India, Jawa.

Notes: Endemic to Western Peninsular India. Reported from Goa, Karnataka, Kerala & Maharashtra. Thus this report is a new distributional record for Tamil Nadu.

Eriocaulon setaceum L., Sp. Pl.: 87.1753; Hook.f, Fl. Brit. India 6:572.1893; C.E.C. Fisch. In Gamble, Fl. Madras 1605.1931(3:1120.1957, repr.ed.); R.Ansari & P.Balakr, Eriocaulaceae India 67.1994; *Lasiolepis aquatica* (Sagot ex Körn). Boeckeler, Flora 56: 91.1873; *Eriocaulon capillus-naiadis* Hook.f., Fl. Brit. India 6: 572.1893; *Eriocaulon cauliferum* Makino, Bot. Mag. (Tokyo) 24: 165.1910.

Caulescent herbs; rootstock absent; stem up to 40cm long. Leaves cauline, filiform, up to 6cm long; sheaths up to 3.5 cm long. Male flowers: Sepals connate into a spathe, 3-lobed, black or straw-coloured; Petals 3, black gland absent; anthers 6, globose, black. Female flowers: Sepals 3, free, sub-equal; Petals 3, sub-equal, spatulate, not clawed, with or without black gland. Seed oblong-elongated; cells of seed coat transversely elongated, aligned in vertical rows; appendages 3-8 from the transverse radial walls, setiform, truncate at apex, with mucilaginous coating above the appendages.

Fl. & Fr.: July – October

Distribution-World: Sri Lanka.Trop. & Subtrop. Old World.

Notes: In India it is reported from Andhra Pradesh, Goa, Karnataka and Kerala. This report is a new distributional record for Tamil Nadu.

Eriocaulon longicuspe Hook.f, Fl. Brit. India 6: 573.1893; Ruhland in Pflanzenr. (Engler) IV 30(13): 115. 1903; Fyson in J. Indian Bot. 2:308. 1921; R. Ansari & N.P.Balakr., Eriocaulaceae India 96. 1994.

Acaulescent herb; rootstock absent. Leaves up to 10 x 0.9cm; sheaths up to 6.5cm long. Male flowers: Sepals 3, free; Petals 3, unequal, with a black gland; anthers 6, black. Female flowers: Sepals 3, free, hoary towards apex, black; Petals 3, subequal, spatulate, not clawed, hoary, with a black gland. Seed ovoid, cells on seed coat transversely elongated, aligned in vertical rows; appendages 2-3 from transverse radial walls, rectangular.

Fl. & Fr.: June – February

Distribution -World: C. & S. India, Sri Lanka.

Notes: In Tamil Nadu it has been reported only from Dindigul. Thus this finding is a new distributional record for the Nilgiris.

Eriocaulon xeranthemum Mart. in N.Wallich, Pl. Asiat.Rar. 3: 29. 1832; Hook.f, Fl. Brit. India 6: 584. 1893; Ruhland in Pflanzenr. (Engler) IV 30(13): 96. 1903; Fyson in J. Indian Bot. 2:200. 1921; C.E.C. Fisch. In Gamble, Fl. Madras 1614.1931 (3:1124.1957, repr.ed.); R. Ansari & N.P.Balakr., Eriocaulaceae India 54.1994; *Eriocaulon pygmaeum* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 3: 281.1851, nom. illeg.

Acaulescent herbs; rootstock absent. Leaves rosulate linear, up to 4 x 0.3cm; sheath up to 3 cm long. Male flowers: Sepals cuneate, connate into a spathe; Petals 3, subequal, black gland present; anther 6, globose, black. Female flowers: Sepals 3, free, dissimilar, hoary at apex, straw-coloured; Petals 3, spatulate, not clawed, black gland present. Seed oblong; cells of seed coat transversely elongated, aligned in vertical rows; appendages 2-4 from the transverse radial walls, setiform, truncate at apex.

Fl. & Fr.: July – November

Distribution-World: India to W. Malaysia.

Notes: In Tamil Nadu it has been reported from Coimbatore and Kanniyakumari. Thus a new distributional record for the Nilgiris.

CONCLUSION

This study was an effort to identify and document the genus *Eriocaulon* L. existing in the seasonally water-logged grasslands of Mudumalai Tiger Reserve. Of the nine species reported, three of them are new record to State of Tamil Nadu and two of them to the District of Nilgiris.

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