



Eleocharis konkanensis, a new species of Cyperaceae from the Konkan region of Western Ghats, India

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Abstract

A new species *Eleocharis konkanensis* Chandore, Borude, Kambale & S.R. Yadav from Konkan region of Maharashtra, India is described and illustrated here.

Keywords: *Eleocharis*, Konkan, Lateritic Plateaus, new species, Achene, taxonomy

Introduction

The genus *Eleocharis* Brown (1810: 224) (Cyperaceae) is distributed worldwide with about 200 species (Gonzalez-Elizondo and Peterson 1997); however, recently Govaerts *et al.* (2015) have reported ca. 297 species, 12 subspecies and 17 varieties for the world. The genus is widely distributed from tropical to temperate regions of both hemispheres. In India, it is represented by about 21 species (Prasad and Singh 2002). *Eleocharis wadoodii* S.R.Yadav, Lekhak & Chandore (2009: 37) and *E. khandwaensis* Mujaffar, Chandore & S.R.Yadav (2014: 710) have been described recently from state of Maharashtra and Madhya Pradesh (India) respectively (Yadav *et al.* 2009, Shaikh *et al.* 2014). Similarly, one more species of *Eleocharis* i.e. *E. setifolia* (A.Rich) Raynal (1967: 318) (= *Isolepis setifolia* A.Rich. (1851: 298) has been recorded for India by Wadoodkhan (2015).

During our floristic survey, some specimens of *Eleocharis* were collected from lateritic plateaus around Barsu, Hativale, Jaitapur, Rajapur and Vaibhawadi of Konkan region of Maharashtra, India. Careful observations were made on the specimens in field as well as in laboratory under stereo-zoom microscope. Perianth bristle, achene and style base characters are of special importance in taxonomy of the genus. After examination of relevant literature (Simpson 1988; Wadoodkhan 2015) and critical analysis of achene morphology by SEM, it is revealed that it is to date undescribed species of *Eleocharis*. Hence, it is described and illustrated here as a new species.

Eleocharis konkanensis Chandore, Borude, Kambale & S.R.Yadav, *sp.nov.* (Fig. 1 & 2)

Eleocharis konkanensis Chandore, Borude, Kambale & S.R.Yadav is similar to *Eleocharis setifolia* (A.Rich) Raynal, but differs in its pentangular stem (as against quadrangular), basal tubers absent (as against tubers present), papillae present on surface of achene (as against smooth surface) and 2–5 hypogynous bristles (as against bristles absent). Other differences between *E. konkanensis* Chandore, Borude, Kambale & S.R.Yadav and *E. setifolia* (A.Rich) Raynal are listed in Table 1.

Type:—INDIA, Maharashtra, Ratnagiri District, Rajapur, on the way of Sakar-Jaitapur road, 16° 35'231"N, 73°24'712"E, 200–300 ft, 7 July 2015, A.N.Chandore 1921 (holotype CAL!, isotypes BSI!, K!, SUK!).

Perennial herbs. Rhizome short, 0.5–1 cm long with fibrous roots. Culms densely tufted, up to 20 per plant, erect, slender, 5-angled, 5–15 cm in height, 0.4–0.7 mm in diam., pale green; sheath 2 per stem, membranous, yellowish to light brown, outer sheath 0.5–0.9 cm long; inner 1.2–3 cm long, oblique at mouth, sheath apex acute. Spikelet placed oblique at the tip of culm, ovate to subcylindrical, 3–5.5 × 0.6–1.8 mm, distinctly wider than the culms, terete,

acute, densely many flowered, straw brown; rachilla persistent. Glumes up to 70 per spikelet; lower glume sterile, ovate–obovate, 0.6–1 × 0.4–0.6 mm, midrib green, the margin membranous; fertile glumes ovate to elliptic, 1.0–1.5 × 0.5–0.7 mm, cartilaginous, closely imbricate, deciduous at maturity, convolute when dry, acute at apex, scarious along margins, mid-nerve prominent. Hypogynous bristles 2 to 5, unequal, shorter than achene, smooth or with retrorse barbs at upper half (a few may be retrorse or antrorse), linear, flat, gradually narrowed upwards, slightly connate at base, white or translucent, 0.3–0.5 mm long. Stamens 1 or 2; anthers linear, 0.3–0.5 mm long, brown; filament up to 1.3 mm long, translucent or whitish. Style 3-branched, ca. 0.9 mm long; style–base decurrent on the shoulders on achene, articulate with a distinctly upturned rim, persistent on the nut, ca. 0.2 × 0.2 mm, as wide as the narrowed annular apex, light brown to gray, smooth; stigmas 3, ca. 0.6 mm long, scaberulous. Achene obovate–obovoid, 3-costate, distinctly trigonous, 0.5–0.7 × 0.3–0.4 mm (excluding style–base), papillae present on surface, narrowed at base, greenish or light brown at maturity.

TABLE 1. Comparison between *Eleocharis setifolia* (A.Rich) Raynal and *E. konkanensis* Chandore, Borude, Kambale & S.R.Yadav

Characters	<i>Eleocharis setifolia</i>	<i>E. konkanensis</i>
Habitat	Annual or Perennial	Perennial
Culms per plant	60	15–20
Culms angle	Quadrangular	Pentangular
Culms width	0.3–0.4 mm	0.4–0.6 mm
Sheath (Inner)	0.8–1.6 cm long, whitish to brown; sheath apex acute to acuminate (Ratio sheath length / culm length) = ca. 1/8)	1.2–3 cm long, yellowish to light brown, oblique at mouth; sheath apex acute (Ratio sheath length / culm length) = ca. 1/5)
Basal Tubers	Present	Absent
Lowest Glume	Oval–ovate or lanceolate–ovate, 0.6–1.4 × 0.5–1 mm	Ovate–obovate, 0.6–1 × 0.4–0.6 mm
Hypogynous Bristle	Absent	Present
Achene	Obscurely trigonous	Distinctly trigonous
Achene surface	Smooth	Papillate
Stamen	1	1 or 2

Distribution:—India: Maharashtra; Konkan region, Sindhudurg district—Vaibhwadi; Ratnagiri district—Barsu, Hativale, Jaitapur, Rajapur.

Habitat:—*Eleocharis konkanensis* grows on lateritic plateaus of Konkan along the edges of natural ponds and road side at an elevation of about 200–300 ft from MSL in associations with *Cyperus pulchellus* Brown (1810: 213), *Eleocharis atropurpurea* (Retzius) Presl & Presl (1826: 196) (= *Scirpus atropurpureus* Retzius (1789: 14), *Habenaria grandifloriformis* Blatter & McCann (1932: 17), *Utricularia reticulata* Smith (1808: 119), *Trithuria konkanensis* Yadav & Janarthanam (1994: 18) etc.

Phenology:—Flowering and Fruiting: June–July

Etymology:—The specific epithet is given after the region of occurrence i.e. the Konkan.

Additional specimens examined (Paratypes):—INDIA, Maharashtra, Ratnagiri District, Rajapur Tahsil, Barsu, 9 July 2015, *A.N.Chandore* 1927 (SUK!), Hativale, 10 July 2015, *A.N.Chandore* 1929 (SUK!), Abasaheb Marathe College Campus, Vikhare Gothane, 15 July 2015, *A.N.Chandore* 1930 (SUK!), Sindhudurg District, Vaibhwadi, 21 July 2015, *S.R.Yadav* 1020 (SUK!).

Notes:—*Eleocharis konkanensis* *sp.nov.* is a perennial ephemeral herb. It sprouts with first showers of rains and by the end of June starts flowering. It completes fruit setting in 20–25 days and by end of July glumes and achenes of spikelets drop down. By the time *Eleocharis atropurpurea* and *Fimbristylis* species take over and become major component of monsoon vegetation. Thus, due to short life span taxonomists might have failed to collect the species or taken it for very similar species *E. atropurpurea*.

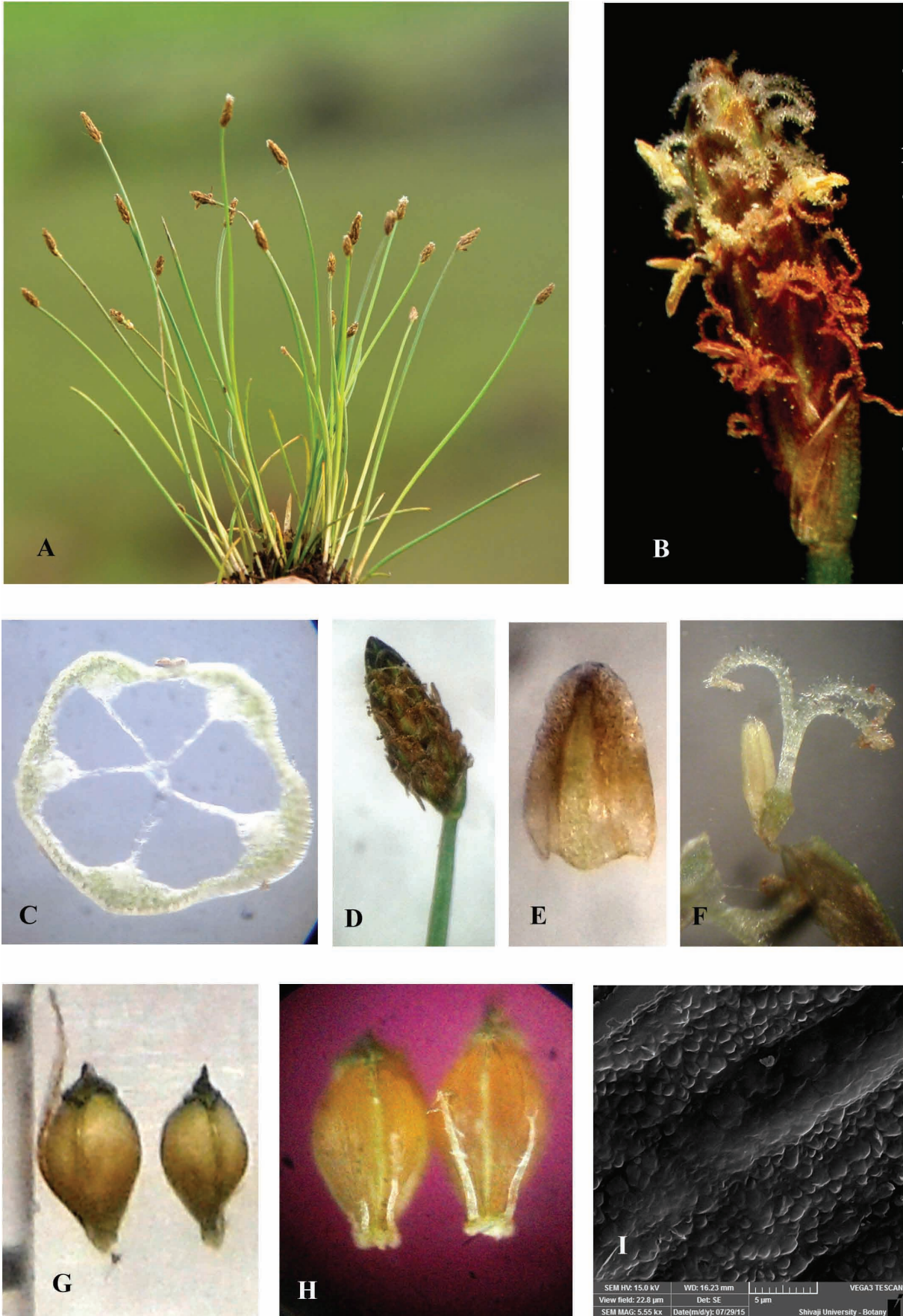


FIGURE 1. *Eleocharis konkanensis* Chandore, Borude, Kambale & S.R.Yadav, A. Habit. B. Spikelet with stigmas and anthers. C. T. S. of culm. D. Spikelet with culm. E. Glumes. F. Flower. G. Achenes. H. Achenes with perianth bristles. I. SEM photograph of achene surface. Photos by A.N.Chandore & S.R.Yadav

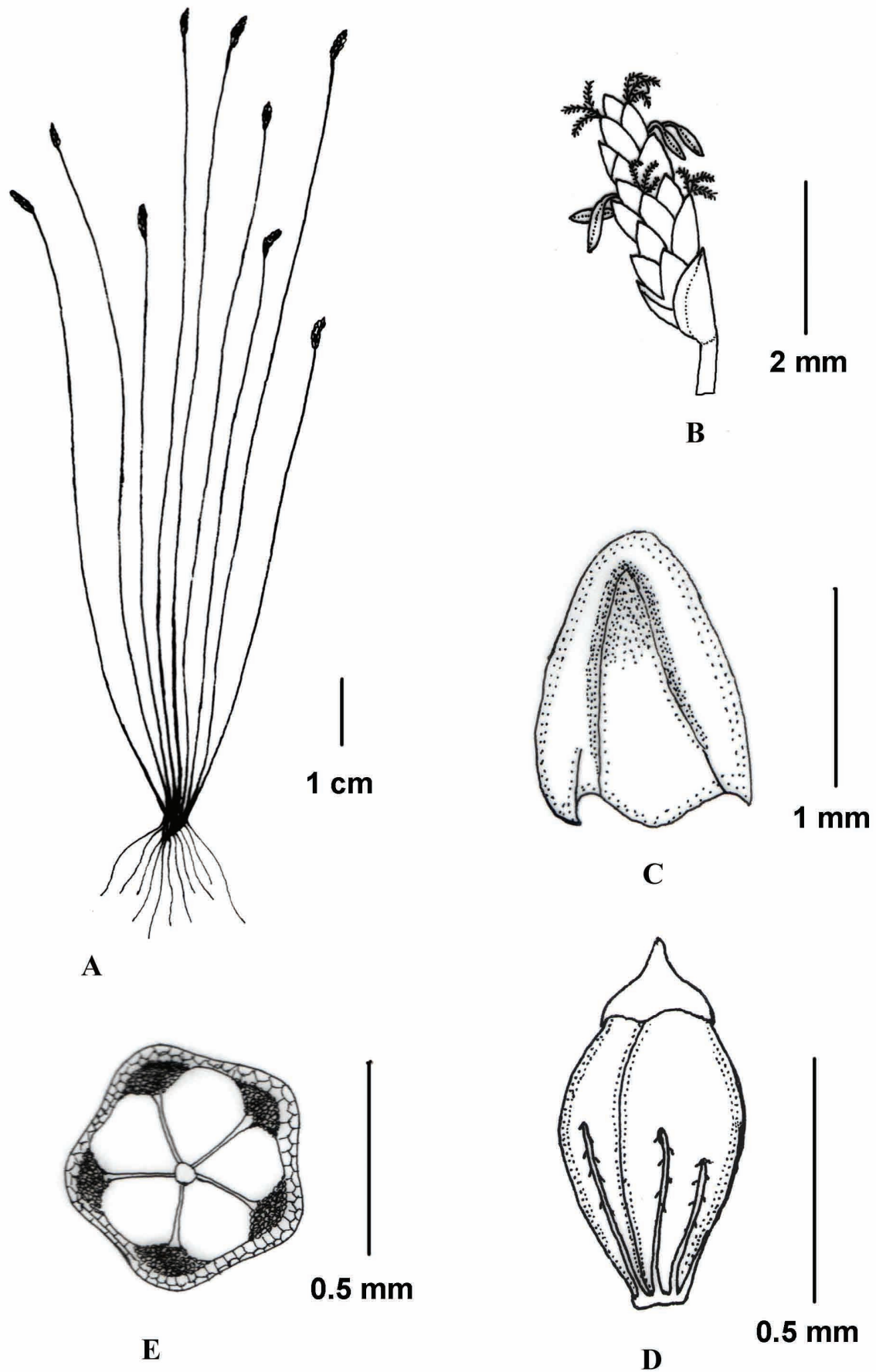


FIGURE 2. *Eleocharis konkanensis* Chandore, Borude, Kambale & S.R.Yadav, (Chandore 1921) A. Habit. B. Spikelet. C. Glume. D. Achene. E. T. S. of culm.

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