

***ELEOCHARIS NEGLECTA* (CYPERACEAE), A NEW SPECIES FROM
KONKAN REGION OF MAHARASHTRA, INDIA**

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Abstract

Eleocharis neglecta Borude, Chandore, Gholave & S.R. Yadav, a new species from Konkan region of Maharashtra, India is described and illustrated. This species belongs to *Eleocharis* subgen. *Limnochloa* (P. Beauv. ex Lestib.) Torr. and it is closely allied to *Eleocharis dulcis* (Burm. f.) Trin. ex Hensch. in having terete and septate culms.

Introduction

The genus *Eleocharis* R.Br. (Cyperaceae) is distributed worldwide with c. 200 species (Gonzalez-Elizondo and Peterson, 1997) however; recently Govaerts *et al.* (2016) have reported c. 300 species 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; Wadoodkhan, 2015). Recently *Eleocharis wadoodii* S.R. Yadav, Lekhak & Chandore and *Eleocharis konkanensis* Chandore, Borude, Kambale & S.R. Yadav have been described from the state of Maharashtra. (Yadav *et al.*, 2009; Chandore *et al.*, 2016). Another species of *Eleocharis* i.e. *E. khandwaensis* Mujaffar, Chandore & S.R. Yadav has been described from state of Madhya Pradesh (Mujaffar *et al.*, 2014). Similarly, one more species of *Eleocharis* i.e. *E. setifolia* (A. Rich) Raynal has been recorded for India by Wadoodkhan (2015). Therefore the present account of *Eleocharis* in India is about 25 species including 3 new species and one addition.

During our floristic survey, some specimens of *Eleocharis* were collected along with *Eleocharis dulcis* from estuaries of Ansure, Dandaansure, Tulsunde and Vengurle of Konkan region of Maharashtra, India. Careful observations were made on the specimens in field as well as in laboratory under stereo-zoom microscope. After examination of relevant literature (Cook, 1996; Koyama, 1985; Wadoodkhan, 2015) and critical analysis of plant specimens revealed that it is to date undescribed species of *Eleocharis*. Hence, it is described and illustrated here as a new species.

***Eleocharis neglecta* Borude, Chandore, Gholave & S.R. Yadav, sp. nov. (Figs 1-3).**

Diagnosis: The new species is similar to *Eleocharis dulcis* (Burm. f.) Trin. ex Hensch., but differs in its subrigid culms (vs. soft culms); culms slender after pressing and drying (vs. culms flat after pressing and drying); spikelet angular, 15–35 flowered, distinctly wider than culms (vs. cylindrical, 60–120 flowered, not wider than culms); sterile glumes ovate, acute at apex, (vs. obovate, acuminate at apex); fertile glumes fairly imbricate, c. ½ portion overlap by other glumes, persistent (vs. closely imbricate, c. ¾ portion overlaps by other glumes, deciduous); epidermal cells on achene surface longitudinally oblong–hexagonal (vs. epidermal cells on achene surface isodiametrically hexagonal to pentagonal).

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Types: INDIA. Maharashtra, Ratnagiri District, Rajapur, on the way of Dandansure road, 16°33'736"N, 73°21'412"E, altitude 13 m, 30 August 2015, A.N. Chandore 1951 (*Holotype:* CAL; *Isotypes:* BSI, K, SUK).



Fig. 1. *Eleocharis neglecta* Borude, Chandore, Gholave & S.R. Yadav, *sp. nov.* A. Habitat (network of young culms); B. Habitat; C. Spikelets; D. Roots & stolon; E. T. S. of culm; F. Flower; G. Achene; H. Achene (SEM) (all from A.N.Chandore 1951). Photo plate by A.N. Chandore.

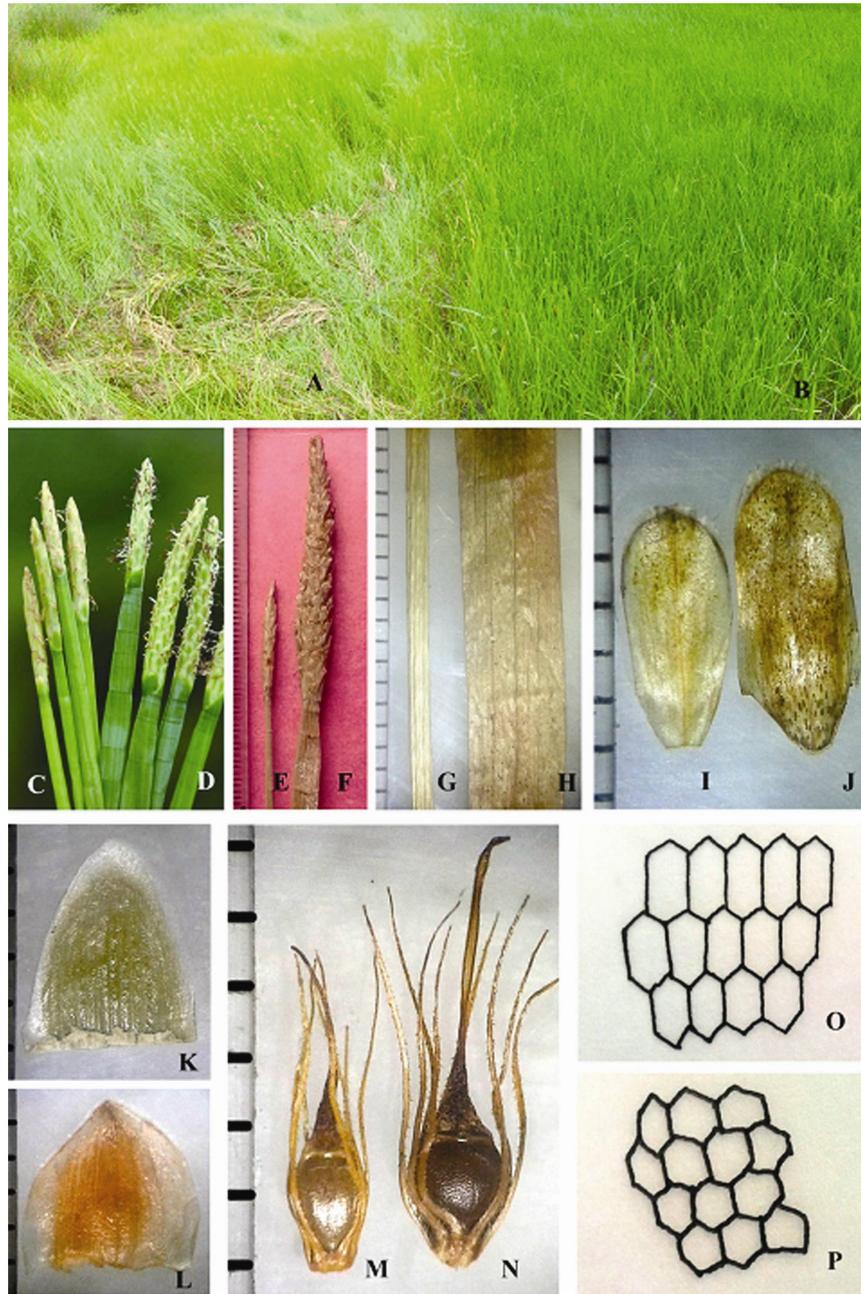


Fig. 2. A. *Eleocharis neglecta* habitat; B. *E. dulcis* habitat; C. & E. *E. neglecta* spikelets; D. & F. *E. dulcis* spikelet; G. *E. neglecta* culm; H. *E. dulcis* culm; I. *E. neglecta* fertile glume; J. *E. dulcis* fertile glume; K. *E. neglecta* sterile glume; L. *E. dulcis* sterile glume; M. *E. neglecta* achene; N. *E. dulcis* achene; O. *E. neglecta* epidermal cell on achene surface; P. *E. dulcis* epidermal cell on achene surface. Photoplate by A.N. Chandore.

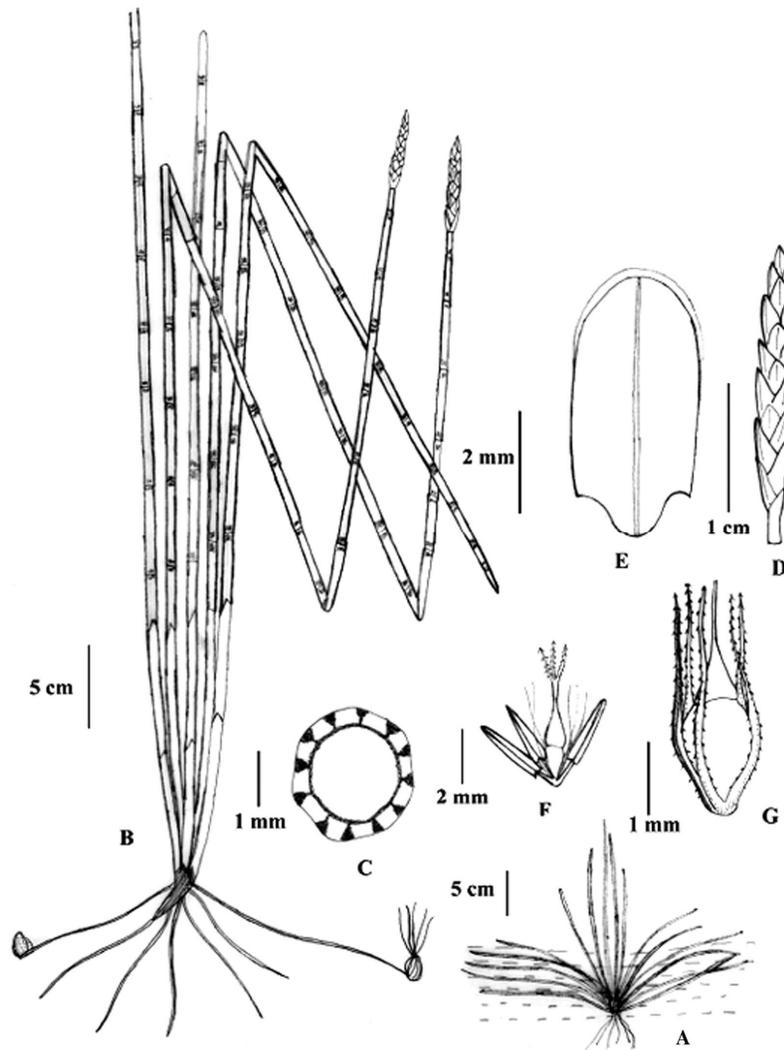


Fig. 3. *Eleocharis neglecta* Borude, Chandore, Gholave & S.R. Yadav, **sp. nov.** A. Habitat (young culms); B. Habit; C. T. S. of culm; D. Spikelet; E. Glume; F. Flower; G. Achene. (all from A.N. Chandore 1951, drawn by D.B. Borude).

Perennial herbs with elongated stolons, terminated by small tubers; tubers 1–3 mm thick, whitish to brown. Rhizome short with fibrous roots. Culms tufted, terete, septate, 8–15 culms per plant, erect, 40–60 cm in height, 1.5–2.2 mm in diam., yellowish to pale green, leafless; sheaths 2 per culm, outer sheath small, 4–5 cm long, dark brown, oblique, acute at apex; inner sheath membranous, 10–14 cm long, oblique at mouth, sheath apex acuminate. Spikelet solitary, terminal, straight, elongated, angular, 1.5–2.5 cm long, 1.5–2.5 mm wide, distinctly wider than the culms, acute, many flowered, straw brown; rachilla persistent. Glumes 20–30 per spikelet; lower glumes sterile, ovate, acute at apex, 5.0–6.0 × 3.0–4.0 mm, margin membranous; fertile glumes oblong-ovate to elliptic, 4.5–5.0 × 1.8–2.0 mm, faintly striations, imbricate, persistent, convolute when dry, obtuse at apex, scarios along margins towards the apex, mid-nerve prominent.

Hypogynous bristles 6 to 7, unequal, two to three times longer than achene, retrorsely barbed throughout, linear, gradually narrowed upwards, slightly connate at base, pale brown, c. 4 mm long. Stamens 3; anthers linear, c. 3 mm long, apiculate, yellowish brown; filament up to 7 mm long, translucent or whitish. Style 3-branched, c. 3.2 mm long; style base conical, persistent on the nut, c. 0.6×0.6 mm, as wide as the narrowed annular apex, brown to dark brown, flattened; stigmas 3, c. 3 mm long, scaberulous. Achene obovoid, biconvex, swollen at middle, $1.4\text{--}1.7 \times 0.8\text{--}1.0$ mm (excluding style-base), narrowed at base, yellowish to light brown, brown at maturity, surface appearing smooth; but under high magnification epidermal cell minute arranged in several vertical rows on each face, cells longitudinally oblong–hexagonal.

Phenology: Flowering and Fruiting from August to October.

Etymology: The specific epithet *neglecta* is given because it was a neglected species.

Distribution: India. Maharashtra, Konkan region, Sindhudurg District- Vengurle; Ratnagiri District- Ansure, Dandaansure, Tulsunde.

Habitat: *Eleocharis neglecta* Borude, Chandore, Gholave & S.R. Yadav grows along side of estuaries of Konkan and road side at an altitude of about 7-50 m in associations with *Cyperus rotundus* L., *Eleocharis dulcis* (Burm. f.) Trin. ex Hensch., *E. geniculata* (L.) Roem. & Schult., *Fimbristylis acuminata* Vahl, *F. dichotoma* (L.) Vahl, *F. tomentosa* Vahl, *Zoysia matrella* (L.) Merr., etc.

Additional specimens examined (Paratypes): INDIA. Maharashtra, Konkan, Ratnagiri District, Ansure, 30 August 2015, A.N. Chandore 1959 (SUK); Ratnagiri District, Tulsunde, 31 August 2015, A.N. Chandore 1960 (SUK); Sindhudurg District, Vengurle, 13 September 2015, A.N. Chandore 1971 (SUK).

Note: *Eleocharis neglecta* Borude, Chandore, Gholave & S.R. Yadav generally grows in association with *Eleocharis dulcis*; therefore earlier workers might have neglected this species or wrongly identified it as *E. dulcis*. A comparative account of *E. neglecta* Borude, Chandore Gholave & S.R. Yadav with *E. dulcis* (Burm. f.) Trin. ex Hensch., is given in Table 1.

Table 1. Comparison between *Eleocharis dulcis* (Burm. f.) Trin. ex Hensch., and *E. neglecta* Borude, Chandore, Gholave & S.R. Yadav.

Characters	<i>E. dulcis</i>	<i>E. neglecta</i> sp. nov.
Culms	Soft, deep green, flat after pressing and drying	Subrigid, yellowish to pale green, slender after pressing and drying
Culm size	5.0–9.0 mm in diameter, 50–100 cm in height	1.5–2.2 mm in diameter; 40–60 cm in height
Inner sheath	15–25 cm long	10–14 cm long
Spikelets	Cylindrical; 3.0–5.5 cm long, 4.0 – 6.0 mm wide, not wider than culms	Angular; 1.4–2.8 cm long, 1.5–2.5 mm wide; distinctly wider than culms
Sterile glumes	Obovate, acuminate, $4.0\text{--}5.0 \times 5.0\text{--}6.0$ mm	Ovate, acute at apex, $5.0\text{--}6.0 \times 3.0\text{--}4.0$ mm
Fertile glumes	Closely imbricate, c. $\frac{3}{4}$ portion overlaps by other glumes, deciduous	Fairly imbricate, c. $\frac{1}{2}$ portion overlap by other glumes, persistent
Flowers	15–35 flowers per spikelet	60–120 flowers per spikelet
Style	2-branched (rarely 3-branched)	3-branched
Achene	Obovoid to suborbicular, $1.8\text{--}2.0 \times 1.0\text{--}1.2$ mm	Obovoid, $1.4\text{--}1.7 \times 0.8\text{--}1.0$ mm
Surface of Achene (high magnification)	Epidermal cells isodiametrically hexagonal to pentagonal	Epidermal cells longitudinally oblong–hexagonal

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