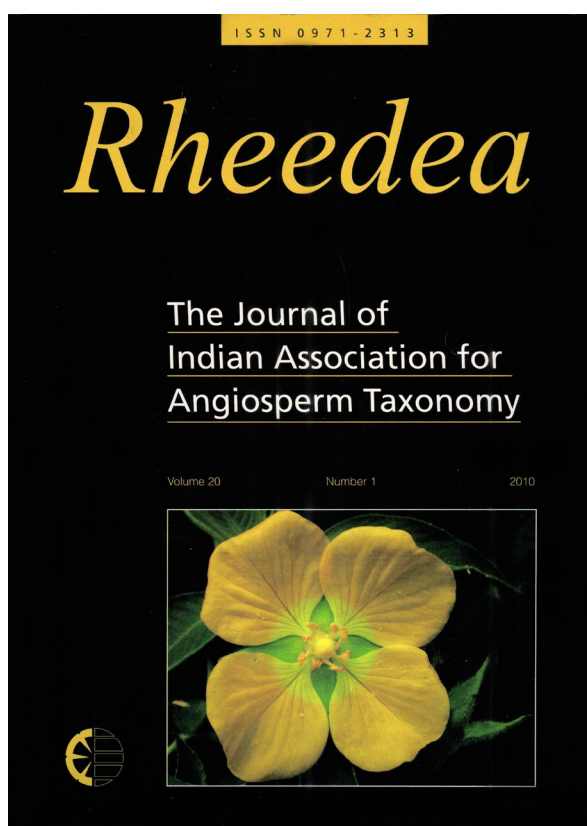




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A new species of *Carex* (Cyperaceae) from the Kashmir Himalaya, India

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Abstract

Carex hokarsarensis E.U. Haq et Dar, is described and illustrated as a new species of the subgenus *Vignea* from the Kashmir Himalaya, India. It differs from its closely allied species *C. vulpinaris* Nees and *C. otrubae* Podp. in the size, shape, texture and beak of the perigynium, and in the arrangement of spikelets.

Keywords: *Carex hokarsarensis*, Hokarsar, Kashmir Himalaya, New species, *Vignea*

Introduction

Carex L. is one of the largest and the most widespread genera of flowering plants, with c. 2000 species in the world (Reznicek, 1990). In India it is represented by c. 230 species (Karthikeyan *et al.*, 1989). The genus, classified under the tribe *Carioxylaceae*, is clearly distinguished from other genera of the family Cyperaceae in having consistently unisexual flowers and a perigynium; the latter is a sac-like structure of prophyllar origin that surrounds the naked gynoecium (Blaser, 1944). The variations in the structure of perigynium are used as the key features in *Carex*; it is largely due to its subtle differences in shape, size, texture and nervation that the recognition of many novelties in *Carex* has been accomplished (Nelmes, 1951).

The first treatment of sedges of India was given by C.B. Clarke (1894) in the Flora of British India, wherein c. 142 species of *Carex* have been reported from the territory. He has divided the genus into 2 subgenera – *Vignea* and *Eucarex*, on the basis of number of styles, 2 in the former and 3 in the latter subgenus. Kukkonen (2001) has divided *Carex* into four subgenera: *Psyllophora*, *Vigneastra*, *Vignea* and *Carex*. The subgenus *Vignea* is characterized by the lack of a prophyll around the base of axis of partial inflorescence (cladoprophyll) [Hendrichs *et al.*, 2004]; spikes mostly bisexual; stigma usually 2-, rarely 3-branched; perigynium planoconvex, rarely biconvex or inflated; achene biconvex, with a rachilla at the base. The subgenus includes c. 25 sections and c. 230 species, distributed mainly in

the extra-tropical and, very rarely, tropical areas of the Northern Hemisphere; a small number of species occurs in the Southern Hemisphere (in western and southern South America, South Africa, western and eastern Australia, New Guinea, New Caledonia, Tasmania and New Zealand) [Egorova, 1999].

Previously, c. 12 species of the subgenus *Vignea* have been reported from the western Pakistan and Kashmir (Kukkonen, 2001). During the present systematic studies on *Carex* in the Kashmir Himalaya, a new species of this subgenus has been described and illustrated.

***Carex hokarsarensis* E.U. Haq et Dar, sp. nov.**
Fig. 1

Vaginae 0.6 – 3 cm longae, culmi basin arcte involventes et plus minusve omnino imbricatae, spicae inferiores plerumque ramosae, sed in speciebus similibus e.g. in *C. vulpinare* et *C. otrubae* vaginae 2 – 8 cm longae, laxe involventes breviter imbricatae. In *C. hokarsarensi* perigynia 3.4 – 4.3 mm longa, 1.5 – 2.7 mm lata, ellipsoidea alis glabris.

Typus: INDIA, **Jammu & Kashmir**, Srinagar, Zainakoot, Hokarsar, 9 km W of Srinagar city, 1600 m, along the National Highway, in semi-aquatic habitat, 27.5.2006, Ehtisham & Dar 003 (Holotypus, Isotypii, KASH).

Perennial herbs, loosely caespitose in small clumps. Rhizomes ± woody, horizontal to slightly ascend-

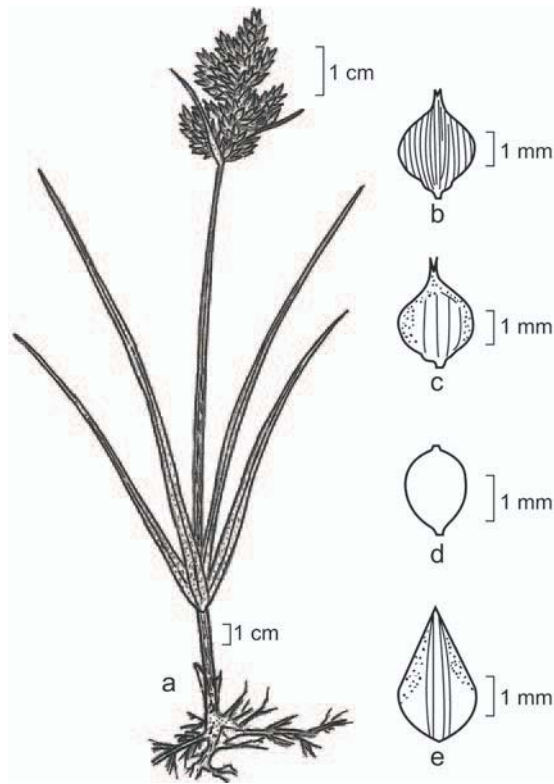


Fig. 1. *Carex hokarsarensis* E.U. Haq *et* Dar, *sp. nov.*: a. Habit; b, c. Perigynium abaxial and adaxial views; d. Achene; e. Pistillate glume.

ing, 2 – 6 cm long between shoots or branches, covered with cataphylls; cataphylls up to 1 cm long, fibrous, light-brown. Vegetative culms short, $1/2 - 2/3$ the length of the fertile culms. Fertile culms 25 – 80 cm high, erect to ascending, sharply trigonous, sides concave, conspicuously grooved, smooth except for occasional finely scabrous angles below inflorescence. Leaves of fertile culms 3 – 6, clustered on the basal 4 – 15 cm of culm; blades $1/2 - 3/4$ of the culm length, occasionally overtopping, 1.8 – 4.2 mm wide, flat to slightly curved at margins, glabrous, margins and abaxial midrib scabrous distally; leaf-sheaths strongly enveloping the culms, overlapping, 0.6 – 3 cm long, papillose inside, glabrous, nerved outside, greenish brown; hyaline area thin-scarious, not prolonged above the leaf-base, apex concave; ligule-arch 2.5 – 4 mm long, rounded, free portion entire, up to 0.7 mm wide, whitish to light-brown. Bracts narrowly linear, sheathless, equal to or longer than their spikes; lowest bract occasionally equaling or overtopping the inflorescence; upper bracts reduced to fibres or glumaceous. Inflorescence spiciform, $2 - 4 \times 0.7 - 1.5$ cm. Spikes 5 – 15, sessile, densely overlapping, conical to lanceolate, androgynous, light to greenish brown, 5 – 15 mm

long with $2 - 5 \times 1 - 2$ mm terminal staminate part with 4 – 8 flowers, and basal $3 - 10 \times 2 - 5$ mm pistillate part with 7 – 25 flowers; the lowest 1 or 2 flowers occasionally remote, up to 1 cm apart, and frequently branched with up to 7 spikelets. Staminate glumes lanceolate to narrowly ovate, $3.5 - 5.2 \times 0.8 - 1.4$ mm, acute to acuminate at apex, hyaline at base, pale-brown above. Anthers 3, 2.2 – 3.5 mm long. Pistillate glumes ovate, $3 - 4.5 \times 1.5 - 2.5$ mm, acute to acuminate at apex, scarious, hyaline at base, pale-brown above. Perigynia ellipsoid, $3.4 - 4.3 \times 1.5 - 2.7$ mm (including c. 1 mm beak and c. 0.3 mm stipe), planoconvex, glabrous, conspicuously nerved on abaxial side and faintly on adaxial side, with narrow, glabrous wings; beak c. $1 \times 0.2 - 0.5$ mm, light to dark green; ostiole bidentate with sharp teeth. Stigma 2-fid. Achenes obovoid-ellipsoid, c. 2×1.5 mm (c. 0.1 mm style base and c. 0.2 mm stipe), biconvex, glossy, yellow to yellow-brown.

Flowering & Fruiting: March – June.

Habitat: A low-altitude (1600 m) species in the Kashmir valley of the Northwest Himalaya, grows in moist habitats along the Hokarsar wetland at Srinagar in the Jammu & Kashmir, India.

Etymology: Specific epithet is based on the type locality.

Discussion: *Carex hokarsarensis* is closely allied to *C. vulpinaris* Nees, but the latter differs in its longer (5 – 8 cm), shortly overlapping leaf-sheaths; shorter (1 – 3 cm long) inflorescence; unbranched spikes; smaller ($2 - 4 \times 1 - 1.7$ mm) pistillate glumes; and smaller ($2.7 - 3.8 \times 1 - 1.4$ mm) perigynia with scabrous margins. *C. otrubae* Podp. is also allied to *C. hokarsarensis* in size and shape of perigynium, achene, and (sometimes) in branched lower spikes. *C. otrubae* is, however, a somewhat robust plant (culms 30 – 110 cm long), with longer (2 – 8 cm), shortly overlapping leaf-sheaths, wider (2.5 – 6 mm) leaf blades, smaller ($3 - 3.7 \times 1.5 - 1.6$ mm) pistillate glumes, and scabrous perigynium wings. Furthermore, it is distributed in Europe, eastward to Iran, Tajikistan and Pakistan (Kukkonen, 1998), but has not been reported from the Kashmir Himalaya.

Carex hokarsarensis can be distinguished from its allied species by the following key

1. Leaf-sheaths close, \pm completely overlapping, 0.6 – 3 cm long; spikes frequently branched; pistillate glume 1.5 – 2.5 mm wide; perigynia widely ellipsoid, with glabrous wings ***C. hokarsarensis***

1. Leaf-sheaths distant, shortly overlapping, 2 – 8 cm long; spikes rarely branched; pistillate glumes 1 – 1.7 mm wide; perigynia ovoid to narrowly ellipsoid, with scabrous wings.....2
2. Leaf-blades 2.5 – 3 mm wide; inflorescence 1 – 3 cm long; all spikes sessile and unbranched; pistillate glumes 2 – 4 × 1 – 1.7 mm; perigynia ellipsoid, 2.7 – 3.8 × 1 – 1.4 mm**C. vulpinaris**
2. Leaf-blades 2.5 – 6 mm wide; inflorescence 1.5 – 5 cm long; lower spikes sessile, rarely pedunculate and branched; pistillate glumes 3 – 3.7 × 1.5 – 1.6 mm; perigynia ovoid, 3.7 – 4.3 × 1.4 – 2.1 mm**C. otrubae**

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