



## Notes on *Carex* (Cyperaceae) from China: three new species

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### Abstract

*Carex remotistachya*, *C. daxinensis* and *C. fangiana*, three new species from China, are described and illustrated. *Carex remotistachya* resembles *C. doniana* (sect. *Molliculae*), differing by having spikes remote, staminate spikes with a 3–5 cm long peduncle at the base, leaves 3–6 mm wide, and stigmas shorter than perigynia. *Carex daxinensis* is similar to *C. caudispicata* (sect. *Radicales*), but differs in having perigynia ellipsoid-ovoid, 4–4.5 mm long, staminate parts of spikes shorter than pistillate ones, and leaves 2–3.5 mm wide. *Carex fangiana* is similar to *C. nitiditriculata* (sect. *Hymenochlaenae*), differing by having leaves 6–9 mm wide, staminate spike solitary, and perigynia glabrous.

**Key words:** *Carex daxinensis*, *C. fangiana*, *C. remotistachya*, Cyperaceae, new species, taxonomy

### Introduction

The genus *Carex* Linnaeus (1753: 972), a group of perennial grass-like plants, contains four subgenera: subg. *Vigneastra* (Tuckerman 1843: 10) Kükenthal (1899: 516), subg. *Vigneae* (B. Beauvois in T. Lestiboudois 1819: 22) Petermann (1849: 602), subg. *Psyllophora* (Degland 1828: 285) Petermann (1849: 581) and subg. *Carex* (Waterway & Starr, 2007). Recent studies show these subgenera to be largely polyphyletic or paraphyletic, with the exception of subg. *Vigneae* (Waterway & Starr, 2007). In China, the genus is represented by 527 species, of which 260 species are endemic (Dai *et al.*, 2010). It is one of the largest genera of seed plants in China (Wu *et al.*, 2011). Our ongoing field collection and specimen examination in China have resulted in the discovery of fourteen new taxa of *Carex* (Jin 2009, Jin & Zheng 2008, 2010, Jin *et al.* 2003, 2004, 2005a, 2005b, 2011, 2012), as well as a few distribution provincial records (Zhao *et al.* 2011, 2012). In the present paper, we describe three new species from eastern and south-western China, and name them *Carex remotistachya*, *C. daxinensis* and *C. fangiana*. All three are narrow endemics, and may be appropriate for listing as threatened taxa, following IUCN guidelines.

### Taxonomic treatment

*Carex remotistachya* Y. Y. Zhou & X. F. Jin, *sp. nov.* (Figure 1)

*Species nova C. donianae* Spreng. *affinis est, a qua spikes inter se remotis, spikes staminatis pedunculos 3–5 cm longos gerentibus, foliis 3–6 mm latis, stigmatibus perigyniis brevioribus differt.*

**Type:**—CHINA. Zhejiang Province: Pan'an County, Shanghu Township, Sanhuang, 120°36'18.75"E, 29°07'17.09"N, along stream beside forests, elevation 450 m, 16 May 2012, X. F. Jin 2872 (holotype HTC!, isotype ZM!).

Perennial herbs. Rhizomes indurate, with slender stolons. Culms 40–60 cm tall, acutely trigonous, scabrous, with brownish bladeless sheaths at base (aphyllopodic). Leaves shorter than culms, or nearly equal in length; blades 3–6 mm wide, flat, scabrous on upper margins. Involucral bracts leaflike or shortly leaflike, lower ones longer than spikes, uppers nearly equaling spikes, not sheathed. Spikes 3 or 4, remote; terminal spike staminate, clavate, 3–4.5 cm long, ca. 3 mm wide, with a 3–5 cm long peduncle at base; lateral spikes pistillate, cylindrical, 2.5–5 cm long, 6–8 mm wide, densely flowered, the lowest long pedunculata, upper ones shorter. Staminate scales oblong-

**Etymology:**—The species is named in honor of Professor Wen-Pei Fang (1899-1983), who devoted his professional life to the study of Chinese *Rhododendron* L. (Ericaceae) and *Acer* L. (Aceraceae). Prof. Fang was one of the early founders of Herbarium of Sichuan University (SZ).

**Similar species:**—*Carex fangiana* belongs to *C.* sect. *Hymenochlaenae* (Drejer 1844: 10) L. H. Bailey (in Coulter 1885: 379), characterized by having long perigynium beaks, culms central, perigynia frequently membranaceous, shiny, style not thickened at base. It is morphologically similar to *C. nitidiutriculata* L. K. Dai (1999: 186), a species endemic to eastern Yunnan of China, but differs in having staminate spike solitary, perigynia glabrous, and leaves 6–9 mm wide. Characters distinguishing *C. fangiana* from *C. nitidiutriculata* are summarized in Table 1.

**TABLE 1.** Diagnostic characters distinguishing *Carex fangiana* from *C. nitidiutriculata*.

Characters	<i>C. fangiana</i>	<i>C. nitidiutriculata</i>
leaf	6–9 mm wide, adaxially scabrous	3–5 mm wide, adaxially smooth
involucral bracts	nearly equaling inflorescence	longer than inflorescence
staminate spike	solitary, 4–5 cm long	one or two, 1–3 cm long
perigynium	nearly equaling pistillate scale, brown, glabrous	much longer than pistillate scale, pale yellowish green, spinulose on beak margins
achene	obovoid	obovoid-ellipsoid

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