



Notes on *Carex* (Cyperaceae) from China (III): the description of four new species

XIAO-FENG JIN, WEI-JIE CHEN & JIA-MENG CEN

College of Life & Environment Sciences, Hangzhou Normal University, No. 16 Xuelin Street, Xiasha Higher Educational District, Hangzhou, Zhejiang 310036, People's Republic of China. (docxfjin@163.com)

Abstract

Carex scopulus, *C. bamaensis*, *C. pararadicalis* and *C. tingnungii*, four new species from China, are described with illustrations in the present paper. *Carex scopulus* is similar to *C. chungii* (sect. *Mitratae*) in having achenes with angles constricted at the middle, but differs by having pistillate scales pale reddish brown and acuminate at apex, staminate scales reddish brown, and perigynia glabrous. *Carex bamaensis* is similar to *C. lancifolia* (sect. *Clandestinae*) in having culms lateral and leaf blades 2.5–6 mm wide, but differs in having culms, leaves and bracts all pilose, and pistillate spikes fairly densely flowered. *Carex pararadicalis* resembles *C. handelii* (sect. *Chlorostachyae*) in having rhizomes long and creeping, but differs by having the terminal spike gynecandrous, lateral spikes pistillate, and pistillate scales obtuse at apex and shorter than the perigynia. *Carex tingnungii* resembles *C. plectobasis* (subsect. *Ferrugineae*) in having 3 stigmas and perigynia that are compressed trigonous and densely whitish hispidulous, but differs in having a solitary staminate spike with 1–4 pistillate flowers at the base, achenes oblong-ellipsoid, and styles that are densely crisped-pilose.

Key words: *Carex bamaensis*, *C. pararadicalis*, *C. scopulus*, *C. tingnungii*, Cyperaceae, new species, taxonomy

Introduction

Carex Linnaeus (1753: 972), a cosmopolitan genus of ca. 2000 species, contains four subgenera: subg. *Carex*, subg. *Psyllophora* (Degland 1828: 285) Petermann (1849: 581), subg. *Vignea* (B. Beauvois in Lestiboudois 1891: 22) Petermann (1849: 602) and subg. *Vigneastra* (Tuckerman 1843: 10) (Kükenthal 1899: 516). Recent studies reveal that these subgenera are largely polyphyletic or paraphyletic, with the exception of subg. *Vignea* (Waterway & Starr 2007, Global *Carex* Group 2015). With ca. 500 species, China is incredibly rich in *Carex*, which are distributed from southern to northern regions and in various habitats (Dai *et al.* 2000, 2010).

Morphologically, the number and arrangement of spikes, whether unisexual or bisexual, and the number of stigmas have been frequently used to divide *Carex* into subgenera (Kükenthal 1909, Ohwi 1936, Nelmes 1951, Dai *et al.* 2000, 2010). The characters used to distinguish among species of *Carex* are diverse: rhizomes elongate or short; culms central or lateral; leaf shape and indumentum; shape and indumentum of staminate and pistillate scales; perigynium shape, size and indumentum; and achene shape and size (Ohwi 1936, Nelmes 1951, Dai *et al.* 2000, 2010). The features of perigynia and achenes, and inflorescence structure are most important to delimit sections and identify species (Ohwi 1936, Nelmes 1951, Dai *et al.* 2000, 2010, Jin & Zheng 2013).

Our ongoing field collections and specimen comparisons have resulted in the discovery of twenty-three new species, subspecies and varieties of *Carex* (Jin *et al.* 2003, 2004, 2005a, 2005b, 2011, 2012, Jin & Zheng 2008, 2010, 2013, Song *et al.* 2008, Jin 2009, Weng *et al.* 2009, Jin *et al.* 2012, Zhou & Jin 2014). Herein, we describe another four species from Zhejiang, Guangxi and Yunnan provinces, China.

Taxonomic treatment

1. *Carex scopulus* X. F. Jin & W. J. Chen, *sp. nov.* (Figure 1)

Species nova est proxima C. chungii Z. P. Wang, a qua squamis pistillatis pallide rubro-brunneis, apice acuminatis, perigyniis glabris, squamis staminatis rubro-brunneis differt.