



Berberis × *baoxingensis* (Berberidaceae), a new putative hybrid from western Sichuan, China

XIN-HUA LI^{*}, WEN-HUI LI¹, LI-CUN ZHANG¹ & XIAO-MING YIN²

¹College of Life Sciences, Nanjing Agricultural University, Nanjing 210095, P.R. China

²College of Resources and Environmental Sciences, Nanjing Agricultural University, Nanjing 210095, P.R. China

^{*} Author for correspondence; e-mail: Lixinhua@njau.edu.cn

Abstract

Berberis × *baoxingensis* is described from Baoxing county, Sichuan Province, China, photographs are provided to thoroughly demonstrate its morphological characteristics. This new species is characterized by bicolored flowers, solitary to 3-fascicled, and the dense raised columnar lenticels revealed by SEM observation on the periderm of branches. *B.* × *baoxingensis* displays close affinities with two sympatric congeners, it resembles *B. sanguinea* in the bicolored flowers, but differs obviously in the brownish yellow, subterete verruculose branches or twigs. *B.* × *baoxingensis* shares the similarity of branch features with *B. verruculosa*, but the latter differs in fragrant yellow flowers, pruinose berries, and the leaves pruinose on the abaxial surface. Field population sampling and statistic analysis are applied to further clarify the morphological differences among the three congeners. Because *B.* × *baoxingensis* exhibits remarkable intermediate features in a set of key taxonomic characters between *B. sanguinea* and *B. verruculosa*, its speciation was possibly derived from the natural hybridization between the two sympatric congeneric species.

Key words: morphological characteristics, quantitative analysis, bicolored flowers, columnar lenticels, natural hybrid

Introduction

The genus *Berberis* Linnaeus (1753: 330) is the largest group within the family Berberidaceae, with two centers of species diversity in the world, one is in Eurasia with ca. 300 species, mainly in Himalayas and China, another in South America with ca. 200 species (Ahrendt 1961). Hitherto, a large majority of species of *Berberis* were published mainly based on observations of the type specimens in herbaria (e.g. Schneider 1908, Ahrendt 1961, Ying 1999), and due to incomplete field records, some important botanical characteristics and its variation patterns were absent or incorrectly recorded in the protologues of many species, and in subsequent monographs or Floras as well (Chamberlain & Hu 1985, Li 2010a, Li & Lu 2013, Li & Zhang 2014), particularly the colors of flowers and ripe fruits, which are often difficult to tell their real characteristics from the dried specimens. These situations have inevitably restricted our fundamental understandings of the variation patterns of *Berberis* species at the population level, and even within an individual shrub, consequently, have resulted in many inexplicit taxa within this genus. Thus, *Berberis* was even regarded as a “taxonomic black hole” (Landrum 1999). In the most complete revision of *Berberis* in the world (Ahrendt 1961), in fact, 496 species were recorded in this genus (Adhikari *et al.* 2012), although this monograph has been an important contribution to the taxonomic study of *Berberis*, however, possibly due to his prime interests in horticulture, Ahrendt’s species concept was narrower and influenced by the plants then in cultivation (Chamberlain & Hu 1985). As a result, in later national or regional revisions of *Berberis*, a few or many species recognized by Ahrendt have been reduced to synonyms (Chamberlain & Hu 1985, Landrum 1999, Li 2010b, Ying 2001, Adhikari *et al.* 2012). On the other hand, some new species of *Berberis* were still reported in recent years (Adhikari *et al.* 2012, Harber 2012, Yu & Chung, 2014). Although natural hybridization and speciation has long been recorded in *Berberis* (Schneider 1923, Levan 1944, Ahrendt 1961, Landrum 1999, Bottini *et al.* 2007, Adhikari *et al.* 2012), however, despite the abundant species diversity in *Berberis* of China, by now, no any case study relating to this topic has been reported from China (Ying 2001, 2011, Yu & Chung, 2014).

Baoxing county is located in west-central Sichuan Province, southwestern China, between the Sichuan Basin and