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Eutrema bulbiferum (Brassicaceae), a new species with bulbils from Hunan, China

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Abstract

Eutrema bulbiferum, a unique new species of Brassicaceae found in the limestone areas of Longshan and Jishou, Hunan, China, is described and illustrated. This species is most similar to *E. tenue* and *E. yunnanense*, but can be easily distinguished by its rosulate fleshy bulbils in the leaf axil or near the stem base, fewer ovules per ovary, slightly 4-angled short wand-like silique, and bended silique apex with a beak. *E. bulbiferum* is categorized into *Eutrema* by phylogenetic analysis based on the nuclear internal transcribed spacer (ITS). It is also clearly separated from *E. tenue* and *E. yunnanense* by the results of both phylogenetic analysis and Principal Component Analysis (PCA) based on morphometric characters.

Key words: Critically Endangered, ITS, IUCN, Karst, PCA

Introduction

The Brassicaceae (Cruciferae) with approximately 49 tribes, 321 genera and 3,660 species is a very important economic group including many species of vegetable crops, spices, edible and industrial oils, ornamentals and weeds (Al-Shehbaz 2011 & 2012). In which, *Arabidopsis thaliana* (Linnaeus 1753: 665) Heynhold (1842: 538), is the most widely studied model plant in experimental biology. Characterized by unique fruits and relatively uniform flowers, Brassicaceae is a well defined group, but also is well known to be taxonomically difficult at the generic level (Al-Shehbaz 2011). *Eutrema* R. Brown (1823: 9–10) belongs to tribe Eutremeae Al-Shehbaz, Beilstein & E.A. Kellogg (2006: 2–4). The molecular data clearly show that *Eutrema* is a polyphyletic genus including all species of both *Neomartinella* Pilger (1906: 134) and *Platycraspedum* O. E. Schulz (1922: 386), and the most species of *Taphrospermum* C. A. Meyer (1833: 172) and *Thellungiella* O. E. Schulz (1924: 251–253) (Al-Shehbaz & Warwick 2005, Warwick *et al*. 2006). About 30 species have been named in *Eutrema* (Al-Shehbaz & Warwick 2005, Al-Shehbaz 2007, Gan & Li 2014). In *Flora of China*, 22 species of *Eutrema* are recorded and 10 of which are endemic (Zhou *et al*. 2001).

The Oolong Mountain National Geopark (OMNG) is located in the Northwest of Hunan province, as well as the boundaries of Hunan, Hubei and Chongqing. It is a typical representative of the bare karst areas in south China and an important part of 8 Chinese endemic genera abundance centers and belongs to Wuling Mountain Region, one of the 14 key biodiversity areas with international importance in biodiversity. However, no systematic floristic study has been conducted before in this area, therefore its plant diversity is poorly known and some specialized species may remain to discover.

During our recent floristic explorations in the OMNG from 2012 to 2014, an unusual population of *Eutrema* with rosulate fleshy bulbils in leaf axil or near the base of stem caught our attentions. This potential new species is assigned to *Eutrema* according to its dehiscent siliques, simple trichomes, cauline leaves with palmate veins, distinct apiculate callosities at vein's ends. Bulbil is a vegetative reproduction and dispersal propagule, consist of a tiny bud and short stem bearing thick fleshy scale-like leaves or leaf bases. Bulbils occur among many herbaceous plants (Walck *et al*. 2010), and sometimes have been recognized as a significant morphological trait in species delimitation

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