Phytotaxa 130 (1): 1–13 (2013)
www.mapress.com/phytotaxa/

Article

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

http://dx.doi.org/10.11646/phytotaxa.130.1.1

Pinellia hunanensis (Araceae), a new species supported by morphometric analysis and DNA barcoding

YU-JING LIU[1], STEVEN G. NEWMASTER[2*], XIAN-JIN WU[3], YUE LIU[1], SUBRAMANYAM RAGUPATHY[2], TIMOTHY MOTLEY[1,4] & CHUN-LIN LONG[1,3,5*]

[1]*College of Life and Environmental Sciences, Minzu University of China, Beijing 100081, China. E-mail: jing_yuzhouniao@126.com; lziqilziqi@yahoo.com.cn*

[2]*Centre for Biodiversity Genomics and Biodiversity Institute of Ontario Herbarium, University of Guelph, Guelph, Ontario, Canada. *Corresponding author, E-mail: snewmast@uoguelph.ca; ragu@uoguelph.ca*

[3]*Key Laboratory of Hunan Province for Study and Utilization of Ethnic Medicinal Plant Resources, Huaihua University, Hunan 418000, China. E-mail:hhuxianjin@163.com*

[4]*Department of Biological Sciences, Old Dominion University, Norfolk, Virginia 23529-0266, USA. E-mail:tmotley@odu.edu*

[5]*Kunming Institute of Botany, Chinese Academy of Sciences, Kunming 650201, China. *Corresponding author, E-mail: long@mail.kib.ac.cn, chunlinlong@hotmail.com*

Abstract

Pinellia hunanensis, a new species from China, is described and illustrated. A key for the identification of all *Pinellia* species in China, Korea and Japan is included. A detrended correspondence analysis identified 6 groups of taxa including the new species. From the 20 samples, analyzing 38 morphological characters. A discriminant function analysis was used to rigorously test the classification of specimens provided in the cluster analysis. DNA barcoding provided phylogenetic support using NJ and Bayesian methods to distinguish all six taxa including the putative new species. This study provides preliminary evidence of morphometric variation within and among species of *Pinellia*, which allows further development of hypothesis concerning species boundaries. Discussions concerning medicinal product substitution within the genus *Pinellia* are presented in the context of conservation initiatives of species in China.

Introduction

The genus *Pinellia*, established by Tenore (1839) in honor of Giovanni V. Pinelli (1535–1601), belongs to the subfamily Aroideae in the family Araceae. *Pinellia* is a small genus with only nine species, distributed through China, Korea and Japan (Mayo *et al*. 1997, Zhu *et al*. 2007). China has the highest species diversity of *Pinellia* species, with eight species (Bogner & Li 2010, Li 1979, P'ei 1935, Zhu *et al*. 2007). One species, *P. tripartita* (Blume) Schott (1856: 5) is limited to Japan and Hong Kong (Ohwi 1984).

Among eight known *Pinellia* species occurring in China, only one species, *P. ternata* (Thunb.) Ten. *ex* Breitenbach (1879: 687) is widely distributed in the whole distribution range of the genus extending from China to Korea, southern and central Japan. Within China, the genus is absent from the North to Northwest (not present in Inner Mongolia, Qinghai, Xinjiang and Xizang) and confined to the East and Southeast. It has its greatest diversity in Eastern China (Figure 1). All species in the genus grow in humid environment. Most species like warm but not hot environment.

Our recent botanical expeditions in Zhongfang County, Hunan, Central China, were conducted in May and middle July from 2009 to 2011. Specimens of a *Pinellia* species had been collected. The morphological characteristics suggested our *Pinellia* specimen was probably an undescribed species. After examining all *Pinellia* specimens at PE and KUN, and studying all literatures on *Pinellia*, we confirmed it represented a new species.

Accepted by Samuli Lehtonen: 12 Aug. 2013; published: 10 Sept. 2013