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Nine new *Zingiber* species (Zingiberaceae) from Vietnam

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Abstract

Nine new *Zingiber* species from Vietnam are reported here. Of these, *Z. lecongkietii* belongs to the sect. *Cryptanthium,* five species, *Z. atroporphyreus, Z. cardiocheilum*, *Z. castaneum*, *Z. mellis* and *Z. plicatum,* are terminally flowering species belonging to the sect. *Dymczewiczia*, and three species, *Z. discolor, Z. microcheilum* and *Z. yersinii,* belong to sect. *Zingiber*. Detailed descriptions, colour plates and preliminary IUCN assessments are given for all species. As the five terminally flowering novelties more than double the previously known number of species in the *Z.* sect. *Dymczewiczia* in Vietnam, a key to this section is provided.

Key words: *Zingiber atroporphyreus, Z. cardiocheilum*, *Z. castaneum*, *Z. discolor, Z. lecongkietii, Z. mellis, Z. microcheilum, Z. plicatum, Z. yersinii*

Introduction

Zingiber Miller (1754; Zingiberaceae, Zingibereae) is distributed in tropical to warm-temperate Asia with the highest diversity in the monsoonal parts of Asia. It is considered the largest genus in subfamily Zingiberoideae with more than 200 names corresponding to approximately 100–150 species (Wu & Larsen 2000, Kishor & Leong-Škorničková 2013). The genus is traditionally divided into four sections based on the position of the inflorescence These are *Zingiber* sect. *Zingiber*, sect. *Dymczewiczia* (Horaninow 1862: 26) Bentham & Hooker (1883: 646), *Zingiber* sect. *Pleuranthesis* Bentham & Hooker (1883: 646) and *Zingiber* sect. *Cryptanthium* Horaninow 1862: 27), although a recent molecular study based on a single marker and limited material indicated that *Zingiber* sect. *Dymczewiczia* and *Zingiber* sect. *Pleuranthesis* are not well segregated from *Zingiber* sect. *Zingiber* (Theerakulpisut *et al.* 2012). As more studies, involving broader sampling and mutiple DNA markers, are certainly needed until a new classification can be formally proposed, the traditional sectional treatment is upheld in this work.

Gagnepain (1908) was the first, and to date also the last, to provide a comprehensive account of Zingiberaceae for Indochina, in which he listed 13 species. Eleven species of *Zingiber* were reported for Vietnam by Phạm (2003) and to this list one new species, *Z. collinsii* Mood & Theilade (Theilade & Mood 1999: 525), has been added. Such a low number of species of the genus known to be diverse in the monsoonal tropics compares poorly to Thailand with 49 species reported by Larsen & Larsen (2006) and further increased with numerous novelties recently reported by Triboun *et al.* (2014), or to China with 42 species (Wu & Larsen 2000). This number, however, reflects the lack of recent explorations, rather than the lack of biodiversity in Vietnam. Since our extensive work on Zingiberales in Vietnam since 2008 (Leong-Škorničková *et al.* 2010, 2011, 2012, 2013, 1014, Leong-Škorničková & Lý 2010, Leong-Škorničková & Lưu 2013, Leong-Škorničková & Trần 2013, Lý *et al.* 2010, Nguyễn & Leong-Škorničková 2012) we have so far confirmed presence of at least 30 *Zingiber* species from all four sections to be present, of which nine belonging to three sections we describe here as new to science. It is likely that the number will still continue to grow as we are progressing to verify the identities of numerous yet unidentified materials.

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