

# Floral biology of *Schismatoglottis baangongensis* (Araceae) in West Sarawak, Borneo

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Received: 13 March 2016 / Accepted: 25 June 2016  
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**Abstract** The flowering mechanism, visiting insect activities, reproductive system, and floral scent composition of *Schismatoglottis baangongensis* a Northwest Bornean locally endemic limestone-restricted protogynous mesophyte were investigated. Anthesis started at dawn and lasted ca 29 h. Fruit set for open pollination (93 %) and restricted access pollination (88 %) were high. *Colocasiomyia* (Diptera, Drosophilidae) and *Cycreon* (Coleoptera, Hydrophilidae) were the main pollinators. *Colocasiomyia* flies present in much higher numbers than *Cycreon* beetles individually carried significantly less pollen load. *Chaloenus* (Chrysomelidae, Galerucinae) was inadvertent pollinators, and *Atheta* (Coleoptera, Staphylinidae) passive visitors. Pollen transferal between dissimilar insect genera (*Colocasiomyia* and *Chaloenus*) is reported for the first time. Low pollen/ovule ratio of *S. baangongensis* indicated an efficient pollination mechanism. Ester compound class floral odours, especially the dominant compounds 3-butenic acid, 3-methyl-, methyl ester, were decisive in attracting pollinators. The spadix appendix of *S.*

*baangongensis* was the main olfactory body although the spathe was detected to release an additional *N*-containing compound, an indole. An increase in the total amount of floral scent from the pistillate flower zone during pistillate phase of anthesis from Period I (06:00–08:00 h) to Period II (08:00–10:00 h) was postulated to detain insects in the lower chamber of the inflorescence.

**Keywords** Ester compound class · Floral volatiles · Pollen load · Pollination

## Introduction

*Schismatoglottis* Zoll. & Moritzi is the largest genus in Tribe Schismatoglottideae, with about 120 described species out of an estimated 250 species (Boyce and Croat 2010; Hay and Yuzammi 2000; Boyce et al. 2010; Wong et al. 2010; Wong 2013). The type of the genus, *Schismatoglottis calyptrata* (Roxb.) Zoll. & Moritzi, is currently circumscribed as a polymorphic species occurring from central and eastern Indo-Malaya to northern Australasia (New Guinea and the Bismark Archipelago) as far east as Vanuatu (Hay and Yuzammi 2000; Wong 2012). Research in Sunda, however, is revealing a more intricate taxonomic situation with the existence of numerous locally endemic and geologically specialized species, the majority undescribed (Wong et al. unpublished data). Alongside a molecular analysis of species' relationships (Low et al. unpublished data), the opportunity to investigate pollination system was pursued: *Schismatoglottis baangongensis* S.Y.Wong, Y.C.Hoe & P.C.Boyce, a recently published species (Wong et al. 2016), is the subject of this study.

Flowering biology and pollination investigations for Schismatoglottideae are limited to a few studies (Hotta

Handling editor: Marlies Sazima.

**Electronic supplementary material** The online version of this article (doi:10.1007/s00606-016-1329-z) contains supplementary material, which is available to authorized users.

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