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Studies on Schismatoglottideae (Araceae) of Borneo LXX — New colonial species for the *Schismatoglottis* [Calyptrata Clade] from Sarawak

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Abstract. Three new colonial species of *Schismatoglottis* Calyptrata clade are described and illustrated from Sarawak and compared with the four pre-existing morphologically similar species occurring in the state. A modified description of *Schismatoglottis niahensis* is provided to correct a previous misinterpretation of the stem architecture. All seven recognized species are illustrated from living plants.

Keywords: Araceae, *Schismatoglottis*, Calyptrata clade, Sarawak, Borneo.

INTRODUCTION

Previous comprehensive regional accounts for *Schismatoglottis* (Hay 1996; Hay and Yuzammi 2000) provided an excellent baseline to undertake further study. Preliminary work on the *Schismatoglottis* Calyptrata clade for Sarawak (Wong 2012; Wong et al. 2016) recognized six species, four of which are stolonifeous-colonial, and of which *Schismatoglottis baangongensis* S.Y.Wong, Y.C.Hoe & P.C.Boyce (Wong et al. 2016: 80) was newly described and *S. muluensis* M. Hotta (Hotta 1966: 235) resurrected from within *S. calyptrata* Zoll. & Moritzi (Moritzi 1846: 83), with the latter treated as absent from Sarawak, and with its occurrence on Borneo considered to be doubtful.

Subsequently (Wong et al. 2018; Wong & Boyce 2020a) defined *S. calyptrata* as restricted to Maluku (the Type is from Pulau Ambon) through the Philippines archipelago and possibly occurring as far north as Lanyu Do (Taiwan) [but see *Schismatoglottis kotoensis* (Hayata) T.C.Huang, J.L.Hsiao & H.Y.Ye (Huang et al. 2000: 305)], eastwards through New Guinea and the Bismarck Archipelago to the Solomons. Determining to what extent *Schismatoglottis calyptrata* sensu strictiore occurs in the eastern part of this area still

requires much work (see Hay in Hay & Yuzammi 2000; Wong et al. 2018). Implementing narrower species definitions means that plants formerly treated as *S. calyptrata* in Sarawak are new species that require publication for Borneo. In many instances the material to hand is inadequate to allow publication at the present time. This paper deals with three novelties for which we have complete material.

As noted in previous papers (e.g., Hay 1998; Boyce & Wong 2015; Kartini et al. 2015; Wong & Boyce 2020b) the extraordinarily complex surface geology of the island of Borneo is enormously important in the separation of species in aroid genera such as *Homalomena*, *Schismatoglottis*, and *Alocasia*, among others. Geology in this paper is specified based on Hutchison (1989, 2005) and Tate (2001).

1. *Schismatoglottis adducta* S.Y.Wong & P.C.Boyce, **sp. nov.**

Type: Malaysian Borneo. Sarawak: Sri Aman Division, Tempat Rekreasi Sungai Raya, banks of the Sungai Raya,1°06'49.2"N 111°30'56.8"E, 86 m asl., 9 Dec 2005, *P.C.Boyce, Jeland ak Kisai, Jepom ak Tisai & Mael ak Late AR-1632* (holotype SAR!). (Figures 1, 2 and 14A).

Diagnosis

Schismatoglottis adducta is most similar to *S. muluensis* by the presence of an elongated partially naked interstice separating the pistillate and staminate florets, and scattered ascending-clavate waxy white pistillate-zone staminodes, but readily distinguished by the blunt bullet-shaped spadix appendix (in *S. muluensis* the appendix cylindrical) two thirds the length of the staminate zone (in *S. muluensis* the appendix twice as long as staminate zone), by the pistillate floret zone comprising about one half of the spadix length (in *S. muluensis* the pistillate floret zone comprising slightly less than one third of the spadix), and dorsally fused to the spathe for about one third its length (vs not at all fused in *S. muluensis*). A bullet-shaped appendix occurs in *S. giamensis* and *S. roh*, from both of which *S. adducta* is distinguished by the elongated naked (vs abbreviated staminode-covered) interstice, and by having only the basal third (vs as least half) of the pistillate floret zone adnate to the spathe.

Description

Moderately robust colonial mesophytic herb 30–70 cm tall. Stems hypogeal, hapaxanthic, individual crowns linked by stout stolons about 10 cm long with internodes 3–9.5 cm long, 7–9 mm in diam., terminal active portion of stem slightly epigeal, erect. Leaves about 7 per crown; petiole 24–40 cm long, 1.8 cm wide at base, tapering to 3.5 mm wide at tip, ventrally weakly broadly channelled for 1/5 of length, smooth, dull medium green with faint slightly darker green striations; petiolar sheath 7–9 cm long × 5–10 mm wide, up to 3/10 of petiole length, persistent, fully attached, equal at both sides, slightly inrolled, tapering; blade 14–23.5 × 5.3–10.4 cm, narrowly hastato-cordate to rather broadly ovato-cordate, margins slightly undulate in the largest leaves, adaxially semimatte rather dark green, posterior lobes bluntly triangular, 3–4 cm, sinus narrow, blade apex acute, ultimately tubular-mucronate for 1 cm; midrib adaxially slightly impressed, rounded-raised abaxially, about 7 mm wide at the insertion on petiole; primary lateral veins about 15 per side, diverging at 40°–60° from midrib, adaxially impressed, rounded raised abaxially alternating with rather fewer interprimary veins, these sometimes arising from near the base of more robust primary veins, especially in the lower half of the blade; secondary veins 0–2 arising from each primary vein with 3–4 secondary veins raised from primary veins near to petiole insertion; tertiary veins inconspicuous. Blooms up to 3 produced in sequence, erect and powerfully esteric-smelling during anthesis; peduncle 14–20 cm long × 4–9 mm wide, terete, medium green. Spathe 9.5 cm long; lower spathe narrowly oblong-ovoid, 4.5 cm long × 1.5 cm wide, base dorso-ventrally oblique for 40% (ventral side) to 25% (dorsal side) the length of the entire spathe, semi-glossy medium green, usually smooth; spathe limb at pistillate anthesis limb much inflated, turbinate, apex briefly mucronate, surrounding the spadix and gaping ventrally, greenish white with darker longitudinal veins, caducous immediately after pistillate anthesis. Spadix 7 cm long, about three quarters length of the spathe; pistillate floret zone slender conic, 3 cm long × 7 mm wide, comprising 40% of spadix length, white, basal third adnate to the spathe; pistils densely arranged, sub-globose-cylindric, 1 mm diam.; style distinct, very short; stigma capitate, somewhat domed, slightly narrower than ovary, 0.8 mm diam.; interpistillar staminodes few and scattered, ascending-clavate, stipe slender, upwards curved, 3 mm long, about twice as tall as pistils, waxy white; sterile interstice cylindric, 7 mm long × 3.5 mm wide, narrower than fertile zones, partially naked, proximally and distally with flattened wedge-shaped staminodes these grading into disproportionately larger (but sterile) florets, female proximally, male distally; staminate flower zone weakly obconic, 2 cm long × 4 mm wide, slightly under 30% the length of spadix, white; staminate florets very densely packed with individual