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Studies on *Schismatoglottideae* (*Araceae*) of Borneo XXXIV – *Schismatoglottis iliata*, a new species from NW Sarawak, and notes on the *Schismatoglottis* Multiflora Group and the *Schismatoglottis mayoana* Complex

Abstract

Wong S. Y. & Boyce P. C.: Studies on *Schismatoglottideae* (*Araceae*) of Borneo XXXIV – *Schismatoglottis iliata*, a new species from NW Sarawak, and notes on the *Schismatoglottis* Multiflora Group and the *Schismatoglottis mayoana* Complex. – Willdenowia 44: 5–11. 27 February 2014. – Version of record published online ahead of inclusion in April 2014 issue; ISSN 1868-6397; © 2014 BGBM Berlin-Dahlem.

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A summary of the *Schismatoglottis* Multiflora Group of Hay & Yuzammi is presented and the group shown to comprise about 15 species, including that described here. *Schismatoglottis iliata* P. C. Boyce & S. Y. Wong is described as a taxonomic novelty from forested sandstone riverside bluffs of the Ulu Batang Kayan, Lundu District, Kuching Division, NW Sarawak, Malaysian Borneo, and compared with the morphologically most similar species, *S. mayoana* Bogner & M. Hotta and *S. nicolsonii* A. Hay, with which *S. iliata* shares leaf blades adaxially matt olive green and abaxially with very fine and dense (c. 2 veins per mm) pellucid secondary venation, and stamen thecae each with two pores. A key to this newly recognized *S. mayoana* Complex is provided, and all described species for the *S. mayoana* Complex are illustrated.

Additional key words: aroids, Malaysian Borneo, Kuching Division, taxonomy, identification key

Introduction

It has been previously highlighted that the Lundu area of Kuching Division, Sarawak, has an aroid flora quite distinct to that of the more southerly and easterly part of the Division (Wong 2010b; Wong & al. 2009). Field work in Lundu and the areas around Sematan and Sempadi continues to reveal taxonomic novelties. One such collection made sterile in 2012 and assigned to the *Schismatoglottis* Multiflora Group and clearly similar to *S. mayoana* Bogner & M. Hotta has recently flowered in cultivation and revealed itself to be a new and undescribed species.

The *Schismatoglottis* Multiflora Group (sensu Hay & Yuzammi, 2000) is a morphologically distinct group of species defined by pleionanthic shoots, a marcescent, or very seldom persistent, ligular petiolar leaf sheath, and a caducous spathe limb. In all species the spadix is held subhorizontal by the bent apex of the peduncle or, less frequently, the bent base of the pistillate zone. All known species of the Multiflora Group are restricted to Borneo, where they are often lithophytic, or occasionally rheophytic, although rather seldom obligately so. Most species are locally endemic, and where known all are habitually restricted to a specific geology.

Circumscription of the *Schismatoglottis* Multiflora Group

Hay & Yuzammi (2000) recognized 14 species for the Multiflora Group. Subsequently, two of these (*Schismatoglottis josefii* A. Hay and *S. sarikeensis* (Bogner) Bogner & A. Hay) have been shown to belong to a separate and not even particularly closely related genus, *Schottarum* P.

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C. Boyce & S. Y. Wong (Low & al. 2013). Access to living plants has also revealed *S. platystigma* M. Hotta and *S. pudenda* A. Hay by the very short petiolar sheath, and the protective role of the petiolar sheath taken over by the cataphylls alternating with each foliage leaf, to be more similar to *S. tecturata* (Schott) Engl. [*Schismatoglottis* Tecturata Group sensu Hay & Yuzammi (2000)] (Boyce & Wong 2013). Of the remaining ten species, *S. monoplacenta* M. Hotta is highly distinctive by the very long, persistent petiolar sheaths, while *S. cyria* P. C. Boyce, although incompletely known, appears by the ligular portion of petiolar sheath seeming very short-lived to not belong to the Multiflora Group, although interpretation of the only collection is equivocal. Lastly, *S. gillianae* P. C. Boyce has short fleshy persistent ligular petiolar sheaths, erect inflorescences on a very short peduncle, and a deliquescing (not caducous) spathe limb, all characters that better place it in the Asperata Group of Hay & Yuzammi. Conversely, observations have established that *S. bulbifera* H. Okada, H. Tsukaya & Y. Mori is a species distinct from *S. multiflora* Ridl. (in which it was included by Hay & Yuzammi), and a further six new species evidently assignable to the Multiflora Group have been recognized and published (Bogner & Boyce 2009; Boyce & Wong 2006; Wong 2010b; Wong & Boyce 2008).

On the basis of the above summary the Multiflora Group comprises perhaps 14 described species occurring predominantly in W and C Sarawak, with extensions as far east as Belaga (*Schismatoglottis erecta* M. Hotta) and into Kalimantan Barat (*S. bulbifera*). The occurrence of the Multiflora Group east of the Rejang Basin is doubtful since the only species occurring there, *S. monoplacenta*, is rather doubtfully assigned to the Multiflora Group. To date no species are recorded for Sabah and the presence of the group in Brunei is dubious owing to the likely taxonomic placement of *S. gillianae*, and possibly of *S. cyria*.

The *Schismatoglottis mayoana* Complex

Schismatoglottis mayoana and *S. nicolsonii* A. Hay are very similar in having pendulous leaf blades, with dense pellucid secondary veins on the abaxial surface and a matt olive green adaxial surface, and stamen thecae each with two minute pores. No other described species in the Multiflora Group has this combination of characteristics. Other matt leaf-bladed species (e.g. *S. clausula* S. Y. Wong, *S. dulosa* S. Y. Wong) have the leaf blades erect to spreading, with the secondary venation sparse and not pellucid and the thecae with a single pore. The few other species of the group with pellucid secondary veins either have the leaf blade adaxially glossy (e.g. *S. bulbifera*, *S. multiflora* Ridl.) or adaxially conspicuously corrugated (*S. maelii* P. C. Boyce & S. Y. Wong); furthermore in these species the secondary veins are not dense and the thecae have a single pore.

Field work has established *Schismatoglottis nicolsonii* to be restricted to rather dry forested sandstone outcrops at Santubong and Bako, opposing promontories about 15 km apart on Tanjung Sipang and Tanjung Po, respectively, across the mouth of a bay in Kuching Division, NW Sarawak. *Schismatoglottis mayoana* Bogner & Nicolson is so far known only from the Matang Massif and the surrounding area of Kuching Division, where it occurs on wet sandstone outcrops. At Kubah N. P. *S. mayoana* co-occurs with *S. multiflora*, the latter restricted to the parts of a waterfall receiving water flow year-round, whereas *S. mayoana* occurs exclusively on the drier shadier parts and is only seldom subjected to spate.

Results and Discussion

Schismatoglottis iliata S. Y. Wong & P. C. Boyce, **sp. nov.** – Fig. 1.

Holotype: Malaysian Borneo, Sarawak, Kuching, Lundu, Ulu Batang Kayang, 01°27'36"N, 109°53'35"E, 17 Jun 2012, *Jepom ak Tisai AR-3972* (SAR!; isotypes: SAR! [alcohol], BO! [alcohol]).

Diagnosis — Schismatoglottis iliata most closely resembles *S. mayoana* Bogner & M. Hotta (Fig. 2), but is immediately distinguishable by the jade-green spathe limb, the shorter spadix c. 5.5 cm long (vs c. 8 cm long), the pistillate flower zone being about the same width as the staminate zone and appendix, the lack of interpistillar staminodes between the pistils (restricted to a row at the base of the pistillate zone), by the appendix staminodes being only c. 0.4 mm across (vs c. 1 mm across) and by the pendulous (not erect) infructescence. *Schismatoglottis iliata* also resembles *S. nicolsonii* A. Hay (Fig. 3), but is separable by the jade-green (vs white) spathe limb and the presence of a sterile interstice between the pistillate and staminate flower zones.

Description — Herbs lithophytic, to 30 cm tall. *Stem* pleionanthic, often somewhat reddish green, condensed, c. 2 cm in diam. *Leaves* several together; *petiole* erect, slender, 13–23 cm long, sheathing only at extreme base, sheath extended into a reddish green, later turning dark brown and papery, tapering ligular portion to 13 cm long; *leaf blade* pendulous, elliptic to rather narrowly oblong-ovate, 14–21 cm long, 4–8 cm wide, base cuneate, apex acuminate for c. 3 cm; midrib abaxially prominent; primary lateral veins hardly prominent abaxially, c. 10 on each side, diverging at c. 45°, alternating with lesser interprimary veins; secondary venation arising from midrib, very fine and dense, pellucid and darker than surrounding tissue. *Inflorescence* solitary, comparatively large; *peduncle* medium semi-glossy green, sometimes slightly suffused reddish brown in lower part, ⅓–½ length of subtending petiole, terete, apex bent, obliquely deflecting spathe and spadix. *Spathe* c. 7 cm long; *lower spathe* bright glossy

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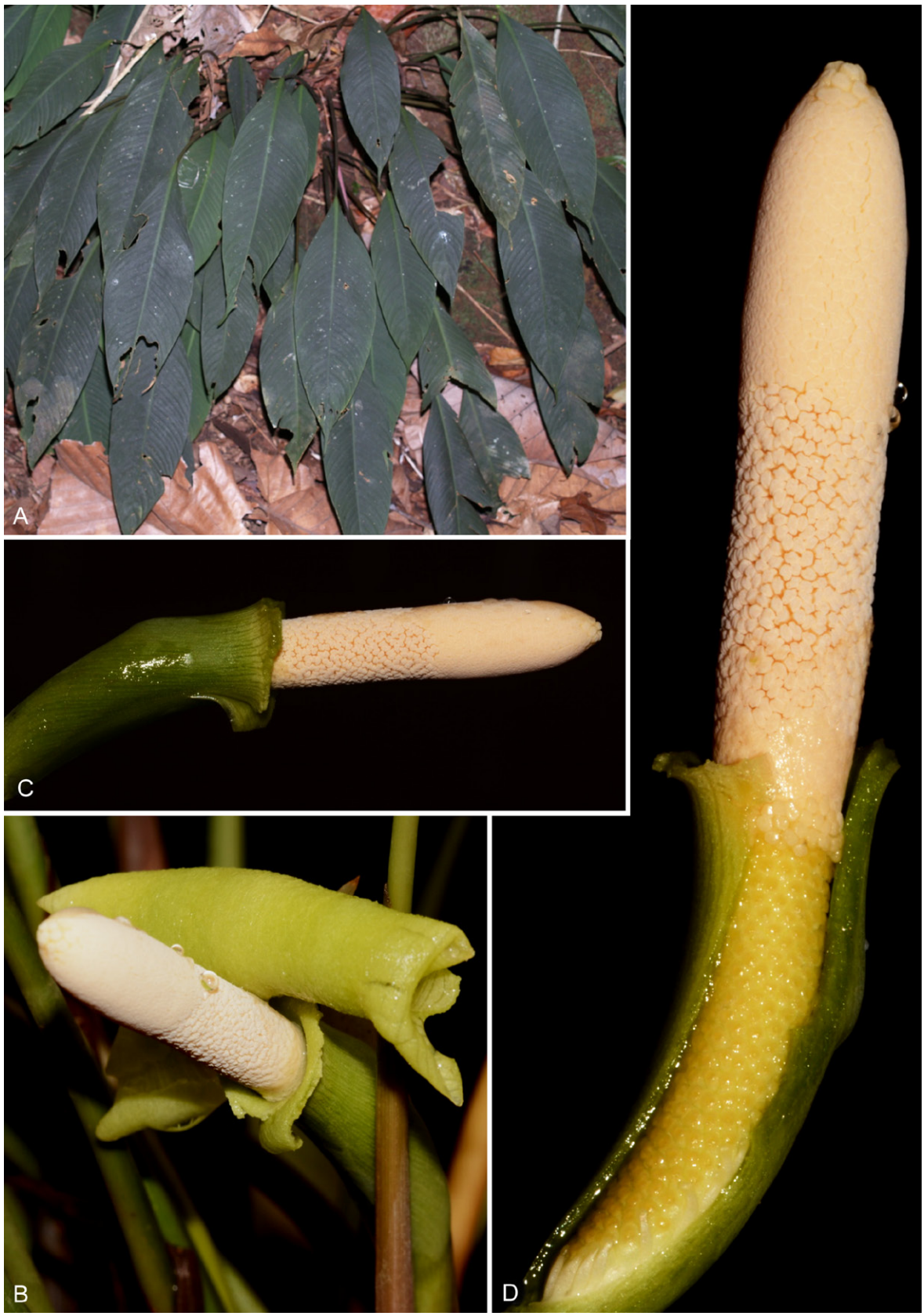


Fig. 1. *Schismatoglottis iliata* – A: plants in type habitat, shaded sandstone bluff above upper reaches (Ulu) of Batang Kayang. Note pendent leaf blades; B: inflorescence at onset of staminate anthesis, with spathe limb caducous and lower spathe top edges flaring; C: inflorescence at staminate anthesis, with spathe limb fallen; D: spadix at onset of staminate anthesis, with nearside part of lower spathe artificially removed. Note that spathe zones of spadix are uniform in width, but interstice staminodes (just below upper edge of lower spathe) have expanded laterally. – All from *Jepom ak Tisai AR-3972*. – Photographs by Peter C. Boyce.

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Fig. 2. *Schismatoglottis mayoana* – A: plants in habitat, edge of sandstone waterfall, Kubah N. P.; B: detail of abaxial surface of leaf blade, showing dense pellucid secondary venation; C: plant flowering (very early pistillate anthesis) in habitat. Note matt reddish-suffused peduncle and while spathe limb; D: inflorescence at late pistillate anthesis. Note that in nature inflorescence would be pendent; E: spadix at late pistillate anthesis, with spathe artificially removed. Note that top of pistillate zone is markedly narrower than other zones of spadix. – All from *P. C. Boyce & S. Y. Wong AR-1828*. – Photographs by Peter C. Boyce.

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Fig. 3. *Schismatoglottis nicolsonii* – A: plants in habitat, edge of sandstone waterfall, Bako N. P.; B: flowering plant in habitat; C: inflorescence at onset of staminate anthesis, with spathe limb shed; D: detail of pistillate zone and lower part of staminate zone. Note that staminate zone is fertile to base; E: spathe limb shed during onset of staminate anthesis. – All from *P. C. Boyce & al. AR-2106.* – Photographs by Peter C. Boyce.

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green with darker longitudinal striations, spindle-shaped, c. 2 cm long, differentiated from limb by a distinct constriction; *limb* jade-green on both surfaces, glossy on inner surface, broadly lanceolate, gaping ventrally at pistillate anthesis, caducous at staminate anthesis (with lower spathe apical edges then flaring), apex mucronate for c. 1 cm. *Spadix* sessile, c. 5.5 cm long, c. ⅔ length of spathe; *interpistillar staminodes* white, clavate, slightly exceeding pistils in height, forming a basal row to pistillate zone on each side along adnation of spathe and spadix; *pistillate flower zone* c. 2.5 cm long, adnate to spathe for c. 1.7 cm; *pistils* very numerous and crowded, pale green, narrowly ovoid to bottle-shaped, c. 0.5 mm in diam.; *stigma* sessile, green, later brown, button-like, narrower than pistil, papillate; *sterile interstice* short, 2–3 mm long, with 2 or 3 irregular whorls of staminodes resembling sterile stamens (i.e. different from interpistillar staminodes); *staminodes* expanding laterally during staminate anthesis to c. 2 × width of pre-anthesis sterile interstice (presumably serving to block access to lower spathe but observations wanting); *staminate flower zone* subcylindric, c. 1.6 cm long, c. 6 mm in diam., barely thicker than apex of pistillate zone; *stamens* pale cream, closely packed, ± rectangular, truncate, c. 1 mm across, with wide connective and shallow suture between thecae; *thecae* at short ends, each with 2 minute pores; *appendix* creamy white, subcylindric to weakly clavate, blunt-tipped, c. 1.5 cm long, about as wide as staminate zone, composed of densely packed sterile staminodes c. 0.4 mm across. *Infructescence* pendulous; *mature infructescence* not seen.

Distribution — Known with certainty only from the type locality in Kuching Division, NW Sarawak, Malaysian Borneo.

Ecology — *Schismatoglottis iliata* occurs as a lithophyte on shaded damp sandstone bluffs above a river at an altitude of c. 20 m.

Etymology — From vulgar Latin *iliatus*, jade (jade-green), in allusion to the spathe limb colour.

Remarks — *Schismatoglottis iliata* is very probably closely related to *S. mayoana* and probably also to *S. nicolsonii*, although as yet molecular analyses have not been attempted. Several other collections of what is very likely *S. iliata* are presently in cultivation from the Sematan and Sempadi areas, but they have yet to flower to confirm identification.

Key to the species of the *Schismatoglottis mayoana* Complex

1. Spadix usually c. 4.5 cm long (Kuching: Bako & Santubong) . . . . . ***S. nicolsonii***
– Spadix at least 5 cm long 2
2. Spadix c. 8 cm long; top of pistillate flower zone c. ½ width of staminate zone and appendix; stamens and appendix staminodes large, c. 1 mm across; interpistillar staminodes present between pistils and forming a row at base of pistillate zone; peduncle and lower spathe matt olive green, usually reddish stained, spathe limb white; infructescence erect (Kuching: Matang) . . . . . ***S. mayoana***
– Spadix c. 5.5 cm long; top of pistillate flower zone about same width as staminate zone and appendix; stamens and appendix staminodes small, c. 0.4 mm across; interpistillar staminodes only present as row at base of pistillate zone; peduncle and lower spathe bright glossy green, lower spathe with darker longitudinal striations, spathe limb jade-green; infructescence pendulous (Kuching: Sempadi) . . . . ***S. iliata***

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References

Bogner J. & Boyce P. C. 2009: Studies on the *Schismatoglottideae* (*Araceae*) of Borneo VI: A new *Schismatoglottis* species from Sarawak, Malaysian Borneo. – Gard. Bull. Singapore **60(2):** 1–9.

Boyce P. C. & Wong S. Y. 2006: Studies on *Schismatoglottideae* (*Araceae*) of Borneo I: A trio of new *Schismatoglottis* from Sarawak, Borneo. – Gard. Bull. Singapore **58(1):** 7–18.

Boyce P. C. & Wong S. Y. 2013: Studies on *Schismatoglottideae* (*Araceae*) of Borneo XXXIII –A review of the *Schismatoglottis* Tecturata Group, including description of a new species, *Schismatoglottis evelyniae*. – Aroideana **36E(1):** 4–15.

Hay A. & Yuzammi 2000: *Schismatoglottideae* (*Araceae*) in Malesia I – *Schismatoglottis.* – Telopea **9(1):** 1–177.

Low S. L., Wong S. Y. & Boyce P. C. 2013: *Schottarum* (*Schismatoglottideae*: *Araceae*) substantiated based on combined nuclear and plastid DNA sequences. – Pl. Syst. Evol.: published at http://dx.doi.org/10.1007/s00606-013-0906-7

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Okada H., Tsukaya H. & Mori Y. 1999: A new species of *Schismatoglottis* (*Schismatoglottidinae*, *Araceae*) from West Kalimantan and observations of its peculiar bulbil development. – Syst. Bot. **24(1):** 62–68.

Wong S. Y. 2010a: Studies on *Schismatoglottideae* (*Araceae*) of Borneo XII: Three new species of *Schismatoglottis* in the Multiflora Group. – Gard. Bull. Singapore **61(2):** 525–540.

Wong S. Y. 2010b: Studies on *Schismatoglottideae* (*Araceae*) of Borneo XIII: A revision of the *Schismatoglottis nervosa* complex. – Gard. Bull. Singapore **62(1):** 177–209.

Wong S. Y. & Boyce P. C. 2008: Studies on *Schismatoglottideae* (*Araceae*) of Borneo III: *Schismatoglottis confinis*, a putative sister taxon to *Schismatoglottis bauensis* from Sarawak, Malaysian Borneo. – Gard. Bull. Singapore **60(1):** 155–163.

Wong S. Y., Boyce P. C. & Bogner J. 2009: Studies on *Schismatoglottideae* (*Araceae*) of Borneo VIII: A review of the *Piptospatha elongata* Group in West Sarawak. – Gard. Bull. Singapore **61(1):** 221–238.

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