

Studies on Schismatoglottideae (Araceae) of Peninsular Malaysia I: On the identity of *Schismatoglottis wallichii* var. *oblongata* and a new name: *Schismatoglottis lowae*

Wong Sin Yeng *

Department of Plant Science &
Environmental Ecology
Faculty of Resource Science & Technology
Universiti Malaysia Sarawak
94300 Kota Samarahan
Sarawak, Malaysia
sywong@frst.unimas.my

Associate Researcher
Harvard University Herbaria
22 Divinity Avenue
Cambridge, MA 02138 USA
*corresponding author

Peter C. Boyce

Honorary Research Scientist
Ludwig-Maximilians-Universität München
Department Biologie I
Systematische Botanik und Mykologie
Menzinger Straße 67, 80638 München

Associate Researcher
Institute for Tropical Biology and
Conservation
Universiti Malaysia Sabah
Jalan UMS, 88400 Kota Kinabalu
Sabah, Malaysia

ABSTRACT

Schismatoglottis lowae S. Y. Wong & P. C. Boyce **sp. nov.** is described and illustrated based on the type of *Schismatoglottis wallichii* var. *oblongata* Hook.f., until now treated as a heterotypic synonym of *S. wallichii* Hook.f. A key to the three accepted species of hapaxanthic-stemmed (Calyptrata Clade) *Schismatoglottis* in Peninsular Malaysia is provided.

KEY WORDS

Perak, Kelantan, Selangor, *Schismatoglottis wallichii*, *Schismatoglottis calyptrata*, hapaxanthic shoot modules

INTRODUCTION

During fieldwork in Perak and Kelantan we have regularly encountered a hapaxanthic-stemmed, stoloniferous, somewhat colony-forming aroid with rather congested crowns of distinctive broadly oblong-lanceolate, obtuse to truncate or

weakly cordate-based leaf blades that are adaxially dull green, occasionally with bivittate grey-green bands. Although routinely determining these plants as *S. wallichii* Hook.f., following Hay (1996) and Hay & Yuzammi (2000), it was with reservations as we had never encountered flowering individuals and in many aspects, not least the dull (not glossy) leaf blades and congested (not widely scattered) crowns the plant does not closely correspond to 'typical' *S. wallichii* from Bukit Larut, Perak.

Recently, eight separate collections of this puzzling plant flowered concurrently in cultivation providing confirmation they were not *S. wallichii* by a clavate spadix appendix (*S. wallichii* is fertile to the spadix tip), stamens with the connective reaching the top of the anther (vs much shorter), thecae dehiscing via a tiny pore (vs large slits), and by the spathe limb caducous in a single piece (as opposed to splitting into numerous circumferential pieces). Further, they clearly corresponded to plants noted by Hay (1996: 14) and Hay & Yuzammi (2000: 111) as being intermediate between *S. wallichii* and *S. calyptrata* and for which a hybrid origin was speculated. Although we

have not followed up on a cytological examination nor crossing experiments we are nevertheless confident that at least in Kelantan hybridization may be ruled out since neither of the presumed parents are present. We sifted a considerable quantity of herbarium specimens for Peninsular Malaysia before eventually locating excellent fertile matches for our unknown – H.H. Kunstler ('Dr King's Collector') 4660 and 10632, both from Perak, and unexpectedly also syntypical for *Schismatoglottis wallichii* var. *oblongata* Hook.f., of which 4660 was selected by Hay (1996) as the lectotype of *Schismatoglottis wallichii* var. *oblongata*, and treated as a synonym of *S. wallichii* (Hay 1996; Hay & Yuzammi 2000). Despite this nomenclatural status neither collection is pertinent to *S. wallichii* while the differences of the spadix, leaf blades, and habit clearly distinguishes them from *S. calyptrata*, currently the only other accepted species for this Clade in the Peninsular.

With no other known Peninsular Malaysian species providing a convincing match, we are hereby describing it as a taxonomic novelty.

KEY TO THE SPECIES OF THE *SCHISMATOGLOTTIS CALYPTRATA* CLADE FOR PENINSULAR MALAYSIA

- 1a. Spadix fertile to the tip, or with at most a few terminate staminodes; spathe limb splitting into numerous circumferential pieces before falling **Schismatoglottis wallichii** Hook.f.
- 1b. Spadix with a distinct sterile appendix; spathe limb caducous in a single piece 2
- 2a. Spadix slender-clavate; stamens rectangular, connective extending to top of anthers; thecae opening by tiny pores **Schismatoglottis lowae** S. Y. Wong & P. C. Boyce
- 2b. Spadix slender- to more often stoutly-clavate; stamens dumbbell-shaped, connective not extending to top of anthers; thecae opening by large slits.
 **Schismatoglottis calyptrata** S. Y. Wong & P. C. Boyce *sens lat.*

Schismatoglottis lowae S. Y. Wong & P. C. Boyce, **sp. nov.** Type: Malaysia, Perak, Gopeng, *H.H. Kunstler ('Dr King's Collector')* 4660 (holo K!; iso CAL). **Figures 1, 2 and 3.**

Homotypic synonym: *Schismatoglottis wallichii* var. *oblongata* Hook. f., Fl. Brit. Ind. 6: 537 (1893); Ridl. Materials Fl. Mal. Pen 3: 33 (1907) & Fl. Mal. Pen. 5: 112 (1925); Hay, Sandakania 7: 15 (1996); Hay & Yuzammi, Telopea 9(1): 155 (2000) — *Schismatoglottis wallichii* f. *oblongata* (Hook. f.) Engl. & K. Krause, Engl., Pflanzenr. 55 (IV.23Da): 100 (1912).

Diagnosis

Schismatoglottis lowae is distinguished from *S. wallichii* by the presence of a clavate appendix (vs spadix fertile to the tip or with only a few terminal staminodes, by anthers more or less rectangular, connective reaching anther apex, (vs dumbbell-shaped with connective shorter than the anther,

thecae opening via minute pores (vs elongated pores), and by the spathe limb inflating and caducous in a single piece (vs spathe limb caducous by splitting into numerous circumferential pieces). *Schismatoglottis lowae* is distinguished from *S. calyptrata* by having the weakly clavate appendix (vs spadix with a stoutly clavate appendix), by the lower spathe accounting for 2/3 of the spathe (vs. lower spathe ca 1/2 the spathe length), and by distant individual crowns (vs dense colonies) of distinctive broadly oblong-lanceolate, obtuse to almost truncate-based leaf blades (vs leaf blades sagittate to cordiform).

Description

Clumping to weakly colony-forming, rather robust stoloniferous herb to 55 cm tall, individual crowns rather congested. **Stem** hapaxanthic, hypogeal. **Leaves** up to c. 10 together; **petiole** c. 15–45 cm long, , ventrally rounded, dorsally flattened, angles blunt, smooth, pale green with scattered



Figure 1. *Schismatoglottis lowae* S. Y. Wong & P. C. Boyce. **A.** & **B.** Plants in habitat with plain and bivittate variegated leaf blades. Note blade is pendulous from petiole. **C.** Inflorescence at pistillate anthesis. **D.** Inflorescence at pistillate anthesis, nearside portion of spathe artificially removed. **E.** & **F.** Spadix at pistillate anthesis, spathe artificially removed. **A – F** from *AR-3286*. Images © P.C. Boyce.



Figure 2. *Schimatoglottis lowae* S. Y. Wong & P. C. Boyce. Holotype specimen – H.H. Kunstler ('Dr King's Collector') 4660 (K). Image © Trustees, Herbarium & Library, Royal Botanic Gardens, Kew. Used with permission.

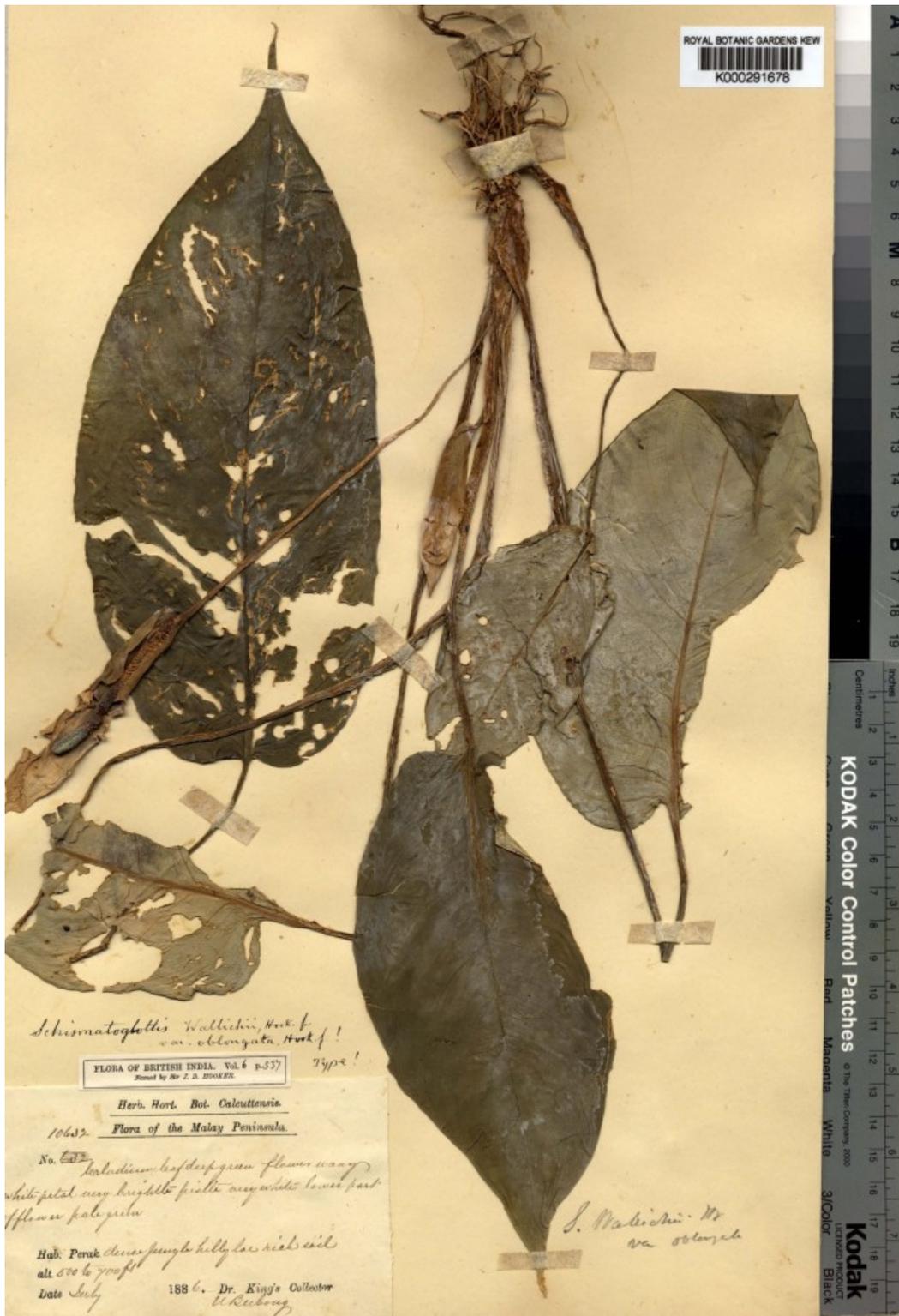


Figure 3. *Schismatoglottis lowae* S. Y. Wong & P. C. Boyce. Paratype specimen – H.H. Kunstler ('Dr King's Collector') 10632 (K). Image © Trustees, Herbarium & Library, Royal Botanic Gardens, Kew. Used with permission.

darker longitudinal broken striations; **petiolar sheath** occupying lower c. 1/5 – 1/4, wings of sheath persistent, membranous, straight to slightly in-rolled, to c. 1 cm wide, tapering, fully attached except occasionally for c. 1 mm ligular apex in largest individuals; **leaf blades** 8–30 cm long × 3–17 cm wide, often somewhat pendulous from the petioles, more or less oblong-lanceolate, base obtuse to slightly cordate with posterior to 6 cm long, mid-green, dull adaxially, paler, abaxially, often variegated bivittate grey-green; **mid-rib** somewhat prominent abaxially; **primary lateral** veins impressed adaxially, prominent abaxially, (6–)10–14 on each side of the midrib, 1.5–3 cm apart, diverging at 30–90°; **interprimary veins** irregular but conspicuous; **secondary venation** inconspicuous; **tertiary venation** barely visible. **Inflorescences** (1–)2–several together, with a weak esteric odour; peduncle much-exserted from subtending leaf sheath, to c. 25 cm long, coloured as for petiole. **Spathe** 12–18 cm long; **lower spathe** more or less cylindrical at anthesis, green, 1–2.5 cm diam.; **spathe limb** (incl. mucro) about equalling the lower spathe in length, ivory to pale yellow, inflated up to c. 4 cm diam., turbinate at anthesis, slightly gaping or with the margins loosely overlapping, abruptly caducous in a single piece, boundary between limb and lower spathe only weakly constricted. **Spadix** 6–12 cm long, sessile, or with the dorsal part of pistillate flower zone naked at insertion, distally weakly clavate; **pistillate flower zone** about half length of spadix, obliquely inserted on spathe; **ovaries** more or less

flask shaped, c. 1 mm tall; **stigma** sessile, button-like; **interpistillar staminodes** scattered, occasionally absent, narrowly stalked and clavate-headed, about twice the height of the pistils; **sterile zone** between pistillate and staminate flower zones abruptly slightly thicker than distal part of pistillate zone, reduced to a few whorls of columnar, rounded-topped staminodes markedly dissimilar to interpistillar ones; **staminate flower zone** cylindrical, c. 0.7–1 cm diam.; **stamens** more or less rectangular, connective reaching anther apex, c. 0.7 mm across, **thecae** more or less flat opening via tiny pores; **pollen** ivory, in short strings; **appendix** weakly clavate. **Fruiting spathe** narrowly urceolate, to c. 5 cm long, dark green with darker striations, declinate, walls splitting and reflexing at fruit maturity to release fruits; **fruits** 2–4 mm long × 1–2.5 mm wide, greenish white; **seeds** ovoid ellipsoid, ca 0.4 mm diam., encased with whitish green gel.

Ecology — Growing on heavy clay soils over granite under perhumid lowland to hill forest between 50 – 500 m asl.

Distribution — *Schismatoglottis lowae* is widespread although rather localized in Kelantan, Perak, and northern Selangor

Eponymy — Named for Low Shook Ling, formerly a doctoral candidate of the first author working on phylogeny and biology of Schismatoglottideae in the Department of Plant Science & Environmental Ecology, FRST, Universiti Malaysia Sarawak.



Figure 4. *Schismatoglottis wallichii* Hook.f. **A.** Plant in habitat. Note blade is erect/arching from petiole. **B.** Inflorescence at pistillate anthesis. **C.** Inflorescence at onset of staminate anthesis, spathe limb beginning to shed. **D.** Inflorescence at late staminate anthesis, spathe limb splitting into numerous circumferential pieces. **E.** Spadix at pistillate anthesis, spathe artificially removed. **F.** Pistillate flower zone. **G & H.** Staminate flower sterile to tip (**G**) and with a few terminal staminodes (**H**). **A – G** from *AR-16*; **H** from *AR-762*. Images © P.C. Boyce.

Currently a postdoctoral student at Xishuangbanna Tropical Botanical Garden, Yunnan, P.R. China.

Notes — *Schismatoglottis lowae* and *S. wallichii* are part of the Calyptrata Clade (Wong et al., 2016), as presently understood represented by three species in Peninsular Malaysia (*S. calyptrata* (Roxb.) Zoll. & Moritzi, *S. lowae*, and *S. wallichii* – **(Figure 4)** of which the occurrence of *S. calyptrata* is attended with some doubt – see Wong et al. (2016).

Paratype: MALAYSIA. **Selangor:** Ulu Bubong, H.H. Kunstler ('Dr King's Collector') 10632 July 1886 (K!)

Other collections seen: MALAYSIA. **Kelantan:** Kuala Krai, Olak Jeram, Chuchoh Puteri, Lata Mok Long, 20 Jun 2011, *Zulhaszman bin. Hamzah* AR-2624 (Herbarium, Faculty of Earth Science, University Malaysia Kelantan); Gua Musang, Kuala Koh, Taman Negara, Rentis Ara, 2 Jun 2010, *P.C.Boyce & Zulhaszman bin. Hamzah* AR-2625 (Herbarium, Faculty of Earth Science, University Malaysia Kelantan); Kampong Telok Katak, Lata Katak, 21 Jun 2011, *Zulhaszman bin. Hamzah* AR-2626 (Herbarium, Faculty of Earth Science, University Malaysia Kelantan); Kuala Krai, Olak Jeram, Chuchoh Puteri, Lata Mok Long, 05°23'38.0"N 102°19'59.5"E, 14 Mar 2016, *Wong Sin Yeng & P.C.Boyce* AR-3287 (SAR!, FRIM!); Kuala Krai, Olak Jeram, Lata Tunggil, Lata Beringin, 05°26'49.2"N 102°19'35.4"E, 14 Mar-2016, *Wong Sin Yeng*

& P.C.Boyce AR-3293 (SAR!, FRIM!); Kuala Krai, Dabong, Gunung Stong, Jelawang Waterfall, 05°20'20.6"N 101°58'25.8"N, 15 Mar 2016, *Wong Sin Yeng & P.C.Boyce* AR-3302 (SAR!, FRIM!) & *Wong Sin Yeng & P.C.Boyce* AR-3303 (SAR!, FRIM!); Tanah Merah, Jedok, Kampung Lawang, Lata Bijih, 05°43'54.4"N 102°00'58.8"E, 16 Mar 2016, *Wong Sin Yeng & P.C.Boyce* AR-3322 (SAR!, FRIM!); Kuala Krai, Lata Chenulang, 13 Jun 2011, *Zulhaszman bin. Hamzah* AR-3358 (Herbarium, Faculty of Earth Science, University Malaysia Kelantan). **Perak:** Ulu Perak, Selama to Lenggong, Hutan Lipur Lata Tebing, Tinggi Lata, Tebing Tinggi 05 09.59N 100 53.72E, 1 Feb 2016, *Lim Teow Yeong* AR-3268 (SAR!, FRIM!); Tapah, Hutan Lipur Lata Iskandar, Air Terjun Lata Iskandar, 04°19'32.01"N 101°19'26.91"E 10 Dec 2014, *Low Shook Ling* AR-5006 (SAR!, FRIM!).

ACKNOWLEDGMENTS

This is part of an on-going research project funded by the Ministry of Higher Education, Malaysia by the Exploratory Research Grant Scheme Vote No. NRGS/1089/2013-(03).

References

- Hay, A. 1996. The genus *Schismatoglottis* Zoll. & Moritzi (Araceae: Schismatoglottideae) in Peninsular Malaysia and Singapore. *Sandakania* 7: 1–30.

- Hay A, and Yuzammi. 2000. Schismatoglottideae (Araceae) in Malesia I – *Schismatoglottis*. *Telopea* 9: 1–177.
- Wong S.Y. [et al., 2016], Y.C. Hoe & P.C. Boyce. 2016. Studies on Schismatoglottideae (Araceae) of Borneo LIX – A preliminary conspectus of *Schismatoglottis* Calyptrata Clade species for Sarawak. *Aroideana* 39(2): 71– 100.