

Studies on Homalomeneae (Araceae) of Borneo XI: *Homalomena matangae*, a new species from Sarawak, Malaysian Borneo

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Studi sulle Homalomeneae (Araceae) del Borneo XI: Homalomena matangae, nuova specie del Sarawak, Borneo Malesiano — Viene descritta ed illustrata la nuova specie **Homalomena matangae** Y.C. Hoe, S.Y. Wong & P.C. Boyce, endemica del massiccio quarzifero del Matang, provincia Kuching, nord-ovest del Sarawak, Borneo malesiano, regione in cui Odoardo Beccari la raccolse per la prima volta durante la sua ascesa del Matang.

Key words: Araceae, Borneo, Malaysia, *Homalomena*, Sarawak.

Introduction

Among the 16 sheets and single line drawing of Bornean *Homalomena* in the Herbarium Beccarianum-Malesia (FI-B), *O. Beccari P.B. 1783* [Sarawak, Kuching, Matang, May 1865] represents a highly distinctive novel species with broadly cordiform leaves with only few primary lateral veins per side, and with a spathe in which the lower part, below the constriction, exceeds the length of the spathe limb.

In common with much of Beccari's collections, *P.B. 1783* [*Piante Bornensi 1783*] is in an excellent

state of preservation. However, it has been pressed with the spathe closed, obscuring critical details of the spadix. Fortunately being very distinctive in overall appearance, and furthermore originating from an area for which there exist reliable records of Beccari's routes (Beccari 1902, 1904, 1921, 1987; Steenis, 1952; Pichi-Sermoli & Steenis, 1983; www.nationaalherbarium.nl/FMCollectors/B/BeccariO), we decided to attempt to refind the plant in habitat. This proved remarkably simple; during our first fieldwork day we located significant populations of what is without doubt the same species. The plants are restricted

to the environs of the trail leading to the Sri Maha Mariamman (Goddess of Mercy) Indian temple, on the NW flanks of the Matang massif. The trail leads not only to the temple but also to the former site of the accommodation for staff and managers of Rajah Charles Brook's tea and coffee plantation, established in 1867. It is known that 'Vallombrosa', as Beccari named his house on Matang, was built on or close to this site. Furthermore, *P.B. 1783* was collected during Beccari's first ascent of Matang, on which excursion he specifically looked for, and located, a suitable site to build the house.

Prior to this, and subsequently, we have surveyed

- 1a. Spathe exterior, especially the lower spathe, with conspicuous extrafloral nectaries drying pale brown; base of staminate zone about the same width as the top of the pistillate zone, transition between the zones gradual. Staminate portion of spadix with a constriction ca $\frac{1}{4}$ way along from the base, coinciding with the spathe constriction, staminate flowers distal to constriction ill-defined. Pistillate zone fusiform. Spathe limb not hooded at pistillate anthesis. Inflorescences smelling of lemon. Sandstones, Matang *H. matangae*
- 1b. Spathe exterior lacking extrafloral nectaries; base of staminate zone much narrower than top of pistillate zone, transition between the zones abrupt. Staminate portion of spadix with a constriction ca $\frac{1}{2}$ way along from the base, not coinciding with the spathe constriction, staminate flowers distal to constriction well-defined. Pistillate zone cylindrical. Spathe limb hooded at pistillate anthesis. Inflorescences smelling of anise (anethol). Limestones, Siburan *H. giamensis*

Homalomena matangae Y.C. Hoe, S.Y. Wong & P.C. Boyce, *sp. nov.*

DIAGNOSIS: *Homalomenae giamensis similis, spatha extra nectariis extrafloralibus, zonae florum staminatorum basi zonae pistillatae apice latitudine aequanti, transitione inter ambo gradatim (non abrupta). Spadicis parte staminata constricta e basi in quarto parte inferiore (contra c. dimidia), flores staminati distaliter e constrictione male definiti et quoque in zona florum pistillatorum fusiforme (non cylindrica) differt. Homalomena matangae ad lapides arenarios restricta dum H. giamensis saxis calcareis obligata.*

TYPUS: Malaysia, Sarawak, Kuching, Matang, May 1865, *O. Beccari P.B. 1783* (holotypus, FI-B) (Figs. 1,2).

DESCRIPTION: Medium to moderately robust, evergreen, glabrous aromatic herbs to ca 110 cm tall. **Stem** pleionanthic, erect to decumbent with the active tip ascending, up to 5 cm thick, pale brown with the exposed axillary buds bright green, with conspic-

uous adventitious roots, these often penetrating the petiole bases of the active tip, internodes to ca 3.5 cm long. **Leaves** up to 10 together, modules starting with a conspicuous 2-keeled short-duration **prophyll**, this pale green, glossy; **petioles** erect to spreading, 54-73 cm long \times 9-12 mm wide at mid-point, sub-terete with the distal-most portion very shallowly channelled and very weakly D-shaped, pulvinate $\frac{1}{4}$ - $\frac{1}{2}$ way back from leaf blade insertion, glossy bright green with obscure and scattered longitudinal short pale green ridges; **petiolar sheath** 21-23 cm long, ca $\frac{1}{3}$ of petiole length, persistent, equal at both sides, wings up to 9 mm wide, open, rounded to somewhat decurrent at apex, glossy medium green; **blade** broadly ovato-cordate to cordiform, ca 35 cm long \times ca 25 cm width, thinly rubbery-leathery, conspicuously quilted between the primary lateral veins, glossy bright green adaxially, somewhat paler abaxially, drying uniformly pale yellow, base cordate, posterior lobes subtriangular 12-16 cm long, obtuse, spreading, occasionally the inner margins slightly overlapping, tip obtuse to somewhat acuminate for ca 2 cm, ultimately mucronate for ca 3 mm, mucro dark brown; midrib raised

Homalomena matangae belongs in the Giamensis Complex (Ng et al., 2011), and represents the second described species for the complex; the other is *H. giamensis* L.S.Tung, S.Y.Wong & P.C.Boyce (Tung et al. 2010). They may be keyed out as follows:

abaxially, ca 1 cm wide at the base, ca 6 mm wide at the centre, adaxially flush with blade, and there ca 14 mm at the sinus, ca 8 mm at the centre; primary lateral veins ca 11 on each side, diverging at 40°-90° from the midrib, adaxially impressed, abaxially raised, curved sharply towards the apex when near the margin; interprimary veins raised, ca 1 mm in width, slightly pale yellow, alternating irregularly with primaries, posterior lobes each with 2-3 primary lateral veins; secondary and tertiary venation not visible, all veins running into a thickened intermarginal vein. **Inflorescences** up to 5 together (although based on fruiting material certainly on occasions more), erect, smelling of lemon (limonene?) at pistillate anthesis, declinate post-anthesis, first inflorescence subtended by foliage leaf, the next by 2-keeled, soon degrading, pale green prophyll ca 11 cm long × ca 1.4 mm wide; **peduncle** 18-22 cm long × 5.5-8 mm wide, glossy pale green with obscure pale white longitudinal striate, otherwise smooth, terete. **Spathe** 10-13 cm long, lower spathe inflating and margin gaping, partially reveal upper part of pistillate flower zone at onset of pistillate anthesis; spathe limb loosening, slightly inflating and then opening wide; lower spathe exterior greenish white with conspicuous irregular longitudinal veins and conspicuous extrafloral nectaries, these later drying and turning pale brown, spathe limb exterior greenish white, the middle portion pale green with a few scattered extrafloral nectaries, interior of entire spathe glossy white; **lower spathe** ovoid-ellipsoid, 5-7 cm long × 2.4-3.3 cm wide at pistillate anthesis, constricted at the junction of the spathe limb coinciding with the lower-most fertile staminate flowers; **spathe limb** 4.5-6 cm long × 3.3-4 cm wide at pistillate anthesis, ovate-triangular, mucro 2.8-4 mm, slightly furled at the onset of pistillate anthesis. **Spadix** stipitate, shorter than spathe prior to anthesis but rapidly extending to exceed spathe limb by ca 2 cm by onset of anthesis, 10-12.5 cm long (post staminate extension), initially straight but gently sigmoid by anthesis, isodiametrically narrowing in the lower quarter of the staminate zone coinciding with the constriction of the spathe; **stipe** 9-12 mm long × 6-7 mm wide, subcylindrical, inserted slightly obliquely on peduncle, glossy yellowish, becoming dark brown in alcohol; **pistillate zone** 3.5-4 cm long × 11.5-13.5 mm wide, ca 1/3 length of spadix, weakly fusiform-cylindrical; **pistils** weakly globose-cylindrical, 1.7-2 mm in diam., 2-3.3 mm tall, those in the middle part

of the zone densely arranged, those in the distal and proximal slightly laxly arranged, yellowish, becoming slightly brownish in alcohol; **style** barely differentiated; **stigma** globose-capitate, smaller than ovary diam., centre slightly impressed, wet with a grey-white jelly-like coating at pistillate anthesis; **interpistillar staminodes**, slender-stipitate, equalling the associated pistils, tip abruptly globose, ca 0.9 mm in diam., waxy white, remaining white or staining very slightly brownish in alcohol; **suprapistillar interstice zone** absent; **staminate zone** 6.3-7.5 cm long × 6.8-8.4 mm wide, ca 3/5 length of spadix, slightly constricted ca 1/2 way along from the base, with the flowers distal to the constriction well-defined; yellowish resin produced from between the staminate flowers after ca 4 hours after onset of pistillate anthesis; **staminate flowers** 1.7-2 mm diam., trapezoid, each comprising 3-4 truncate stamens, each overtopped by a large flat connective; lowermost staminate flowers sterile, these **staminodes** irregularly globose polygonal, each comprising a single sterile anther, ca 0.8 mm long × ca 1.5 mm wide, waxy white; **pollen** extruded in strings, white, turning greyish in alcohol. **Infructescences** up to 7 together, declinate to pendent, spathe entirely persistent, brilliant green with conspicuous dark green longitudinal intermittent striae; peduncle green with pale green longitudinal intermittent striate, otherwise smooth; lower fruiting spathe 6.5-7 cm long × 1.6-2.2 cm wide; fruiting spathe limb 5-6.1 cm long × 8-10 mm wide; **fruits** ca 3 times larger than ovaries prior to fertilization, pale green, smelling reminiscent of overripe *Annona squamosa*; **staminate** portion of spadix turned pale orange-brown, with flowers degraded but not deliquescing; **seeds** not observed.

DISTRIBUTION: Restricted to an area of ca 0.5 km² along the trail to the Maha Mariamman Indian Temple, Matang, Kuching, SW Sarawak.

ETYMOLOGY: The specific epithet is from the Matang Massif, treating the mountain as feminine.

HABITAT: Gentle to steep slopes in lowland tropical perhumid forest on red sandstone-derived ultisols, often along margins of trails. 250-375 m asl.

NOTES: *Homalomena matangae* is closely similar to *H. giamensis*, indeed sterile plants are practically indistinguishable. However, there are striking and consistent differences between the inflorescences of the two species (detailed in the above key above).



Fig. 1 – *Homalomena matangae* Y.C. Hoe, S.Y. Wong & P.C. Boyce. A. Plants in type habitat; B. Leaf blade, adaxial surface. Note the glossy bright green surface; C. Leaf blade abaxial surface; note the few primary lateral veins; D. Detail of the stem; E. Synflorescence emerging; note the 2-keeled prophyll; F. Inflorescences. Note spathes turning green; G. Peduncle and fruit. Note the pale green longitudinal intermittent striae. All from AR-230. Images © Y.C. Hoe.

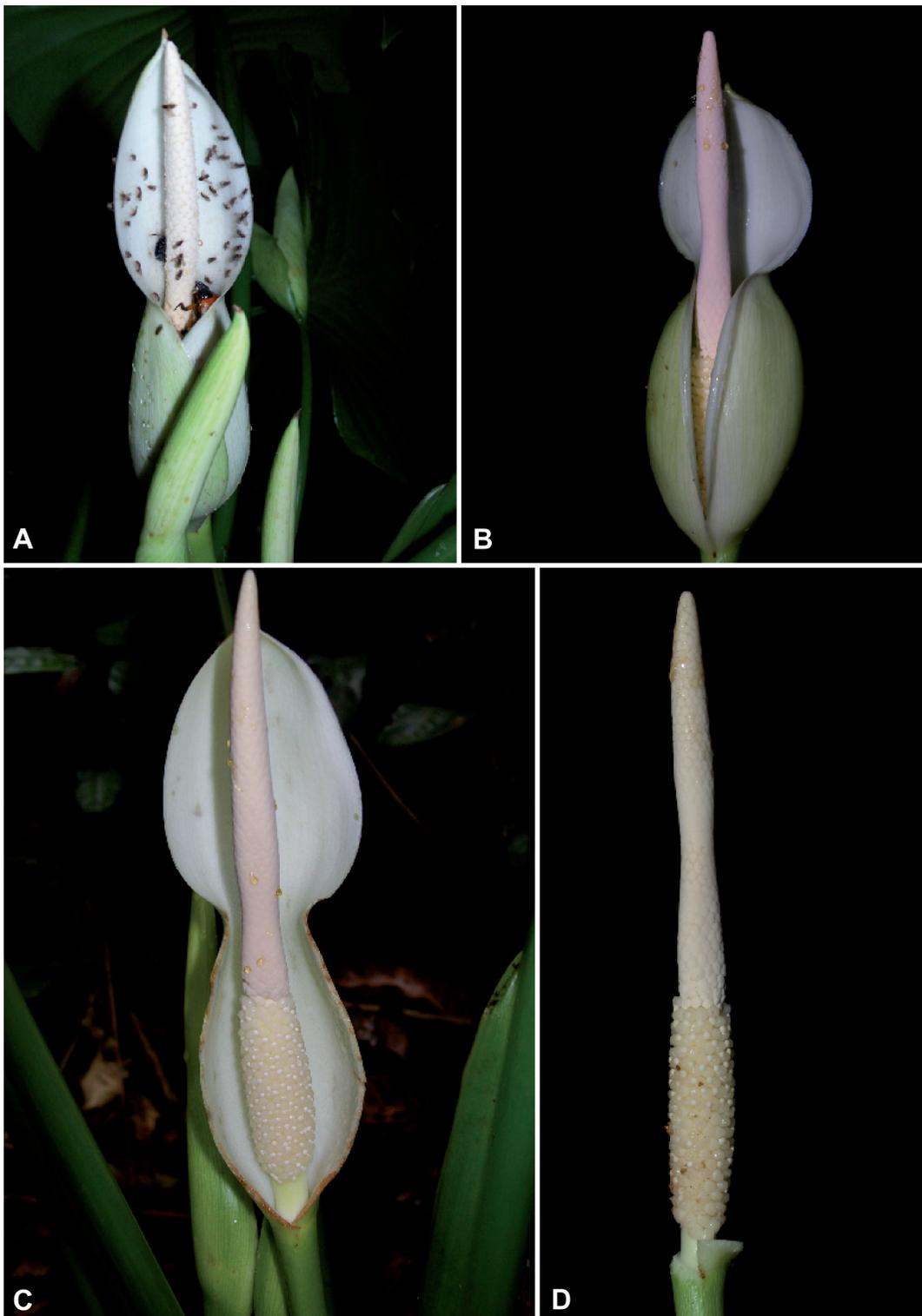


Fig. 2 – A & C: *Homalomenea matangae* Y.C. Hoe, S.Y. Wong & P.C. Boyce. B & D: *Homalomenea giamensis* L.S. Tung, S.Y. Wong & P.C. Boyce. A. Inflorescence just prior to onset of staminate anthesis. Note the extrafloral nectaries on the lower spathe. Insects visible include ruteline and chrysomelid beetles (both just visible), and numerous *Colocasiomyia* (Diptera); B. Inflorescence at pistillate anthesis. Note that the constriction of the spadix staminate portion does not coincide with the spathe constriction. C. Inflorescence at pistillate anthesis, spathe artificially removed. Note the position of the constriction on the staminate portion of the spadix coincides with the spathe constriction (compare to B), the gradual transition between the pistillate and staminate zones, the fusiform staminate zone, and the larger, less hooded spathe limb; D. Spadix, spathe artificially removed. Note that cylindrical pistillate zone, and that the staminate flowers distal to the spadix constriction are well defined. A & C from AR-230. Images © Y.C. Hoe; B & D from AR-2558 Images © P.C. Boyce.

The presence of extrafloral nectaries on the spathe exterior has hitherto not been recorded for *Homalomena*, although such glands are known from *Philodendron* (Madison 1979; French, 1997; Blüthgen et al., 2000). The first author's current MSc work is investigating various aspects of insect attraction and pollination mechanics of the Giamensis and Hanneae

Complexes, including the analyses of floral odour composition.

Other collection seen: Malaysia, Sarawak, Kuching Division, Matang, trail to Maha Mariamman Indian Temple, 01° 35' 25.7" N; 110° 13' 12.8" E, 6 January 2011, *Hoe Yin Chen AR-230* (SAR).

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Summary: *Homalomena matangae* Y.C.Hoe, S.Y.Wong & P.C.Boyce is described and illustrated as a new species from and endemic to the Matang massif sandstone formation, Kuching Division, NW Sarawak, Malaysian Borneo, from where it was originally collected by Odorado Beccari during his first ascent of Matang.