



Citation: Wong Sin Yeng, Peter C. Boyce (2023) Homalomeneae (Araceae) of Borneo XXX — *Homalomena atlas* [Hanneae Complex] a new species from the Rejang Basin, Sarawak. *Webbia. Journal of Plant Taxonomy and Geography* 78(1): 33-37. doi: 10.36253/jopt-14254

Received: Jan 31, 2023

Accepted: Feb 9, 2023

Published: May 14, 2023

Copyright: ©2023 Wong Sin Yeng, Peter C. Boyce. This is an open access, peer-reviewed article published by Firenze University Press (<http://www.fupress.com/webbia>) and distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Data Availability Statement: All relevant data are within the paper and its Supporting Information files.

Competing Interests: The Author(s) declare(s) no conflict of interest.

Editor: Alistair Hay

ORCID

WSY: 0000-0003-4042-9672

PCB: 0000-0002-5856-9561

Homalomeneae (Araceae) of Borneo XXX — *Homalomena atlas* [Hanneae Complex] a new species from the Rejang Basin, Sarawak

WONG SIN YENG^{1,2,*}, PETER C. BOYCE³

¹ Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak 94300 Kota Samarahan, Sarawak, Malaysia

² Harvard University Herbaria, Cambridge, MA, USA.

³ Dipartimento di Biologia, Centro Studi Erbario Tropicale (herbarium FT), University of Florence, Via G. La Pira 4, 50121, Firenze, Italy

*Corresponding author. E-mail: sywong@unimas.my

Abstract. *Homalomena atlas* is described and illustrated as a new species from the western Rejang Basin and assigned to the Hanneae Complex of the Cyrtocladon Clade, taking the complex to 12 described species on Borneo.

Keywords: Araceae, Borneo, Cyrtocladon Clade, Hanneae Complex, *Homalomena* Sarawak, Shales.

INTRODUCTION

The *Homalomena* Hanneae Complex (Ng et al. 2011: 26) of the Cyrtocladon Clade (Wong et al. 2013) is a highly distinctive group of species notable for leaf blades with conspicuous extrafloral nectaries, amber-coloured resin secreted from between the staminate florets shortly before staminate anthesis (Hoe et al. 2011, 2016; Wong & Boyce 2017), and spathes white at anthesis with the persistent post-anthesis spathe turning deep pink to red as the fruits develop. Until recognition of *Homalomena electra* P.C.Boyce & S.Y.Wong (Boyce & Wong 2017) from Peninsular Malaysia the Hanneae Complex was considered to be entirely Bornean (but see Wong et al. 2013: 592). Including that described here, the complex comprises 13 described species, all except *H. electra* restricted to Borneo, and with most species localized. Based on field observations and in particular the huge amount of undeterminable material deposited in herbaria the Hanneae Complex is most probably contains well in excess of 100 species

Geology in this paper is specified based on Hutchinson (1989, 2005) and Tate (2001).

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

Type: Malaysian Borneo. Sarawak, Kapit, Taman Rekreasi Seabai, 1°56'39.2"N 112°54'21.5"E, 76 m asl., 22 Sep 2017, Wong Sin Yeng & P.C.Boyce AR-3640 (holotype SAR! + spirit; isotype BO + spirit!). (Figures 1–3).

Diagnosis

Homalomena atlas is immediately distinguished in the Hanneae Complex by the matte brick-red peduncles with dense pale grey broken longitudinal striations, glossy scarlet petiole bases and dark red petiolar sheath, and by the lower spathe inflating to almost globular during anthesis. *Homalomena atlas* most nearly approaches *H. mutans* (with which it co-occurs at the type locality – see Boyce & Wong 2014: 66) and from which it further differs by the interstice between the zones of staminate and pistillate florets being narrower than the adjacent parts of the respective zones (vs interstice markedly swollen to exceed the width of the fertile zones), and by the glossy broadly ovate-cordate (vs matte triangular-cordate) leaf blades

Description

Medium-sized, rather robust, evergreen, glabrous clumping herb to c. 1 m tall. Crushed tissues strongly aromatic of turpentine. Stem initially erect, decumbent with age with the active tip ascending, 3–3.5 cm thick, semi-glossy medium green; older parts brown; adventitious roots copious, conspicuous, penetrating petiole bases; internodes 1.5–2.5 cm long. Leaves up to ca 20; individual shoot modules beginning with a conspicuous 2-keeled semi-persistent scarlet prophyll; petiole 60–70 cm long × 9–12 mm wide, erect, older leaves with the petiole spreading or procumbent, pulvinate ca 2/3 way along from base, weakly D-shaped in cross-section with angles rounded, distally shallowly canaliculate with the angles bluntly rounded, medium green with broken paler longitudinal striae, lower fifth (about half equal to the length of the sheathing portion), glossy scarlet; petiolar sheath 10–15 cm long, c. 1/5 of petiole length, with wings up to 1 cm wide proximally, tapering distally, open, weakly decurrent at apex, their margins slightly incurved; wings initially deep red brown, soon marcescent along margin, eventually whole sheath marcescent; blade broadly ovato-sagittate or ovato-cordate, 35–45 cm long × 25–35 cm wide, thinly leathery; somewhat quilted between impressed primary veins, with scattered punctate extrafloral nectaries, semi-glossy dark green adaxially, slightly paler abaxially, sagittate at base with sinus narrowly triangular; posterior lobes subtriangular with the outer margin rather abruptly curved, and the



Figure 1. *Homalomena atlas* S.Y.Wong & P.C.Boyce. A. Plant in habitat. See description for dimensions.

inner margin straight to very slightly incurved, obtuse at apex; anterior lobe broadly triangular, acute; mid-rib raised abaxially, c. 8 mm wide at base, 4 mm wide at centre, adaxially impressed; primary lateral veins c. 20 on each side, diverging at 30–70° from midrib, adaxially impressed, abaxially sharply raised, curved towards apex when near margin; interprimary veins slightly impressed adaxially, slightly raised abaxially, alternating irregularly with primaries, posterior lobes each with 4–6 primary veins; secondary venation abaxially raised, arising from mid-rib and primary and interprimary veins; tertiary venation invisible, all veins running into a slightly thickened intramarginal vein. Blooms usually up to 10 together in a simple synflorescence, erect, smelling of anethole at anthesis, post-anthesis and into fruiting declinate; first bloom subtended by a red prophyll, c. 5 cm long × 1 cm wide; subsequent blooms subtended by slightly shorter red prophylls; peduncle 15–18 cm long × 5.0–7.5 mm wide, matte brick red with very numerous pale grey broken longitudinal striae. Spathe c. 11 cm

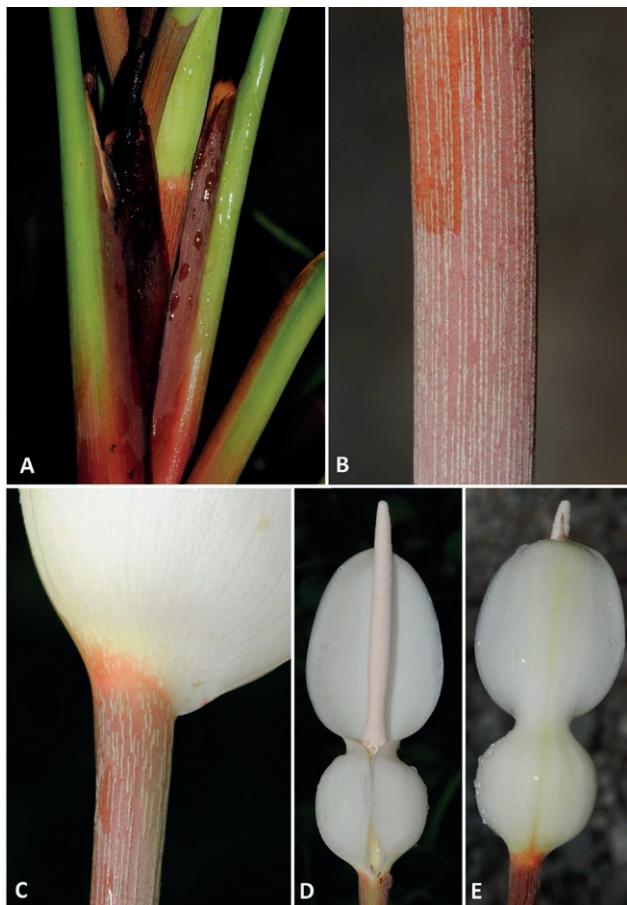


Figure 2. *Homalomena atlas* S.Y.Wong & P.C.Boyce. A. Emerging blooms B. Detail of peduncle. C. Junction of peduncle and lower spathe. D & E. Front and rear views of a bloom at late pistillate anthesis. See description for dimensions.

long \times ca 4 cm wide; lower spathe inflating globose and spathe limb loosening at pistillate anthesis, spathe limb opening widely cucullate at staminate anthesis, white, dorsally with a yellow-pale green median band corresponding to mid-keel and flanked by two paler similarly coloured bands, middle band becoming brick red where it runs into the peduncle, 2.5 cm long \times c. 2.5 cm wide, spathe strongly constricted with constriction coinciding with the base of the staminate floret zone; spathe limb c. 7 cm long \times c. 4 cm wide at pistillate anthesis, ovato-triangular, with greenish red-tipped terminal mucro to c. 3 mm. Spadix 12–12.5 cm long at anthesis, stipitate, spadix shorter than spathe at onset of anthesis, then rapidly extending and bending forwards during pistillate anthesis until exceeding spathe limb by c. 1 cm; stipe c. 10 mm long \times c. 53 mm wide, cylindrical, inserted obliquely on peduncle, waxy white; pistillate floret zone c. 4 cm long \times 1.5 cm wide, c. 1/3 length of spadix, slightly



Figure 3. *Homalomena atlas* S.Y.Wong & P.C.Boyce. A. Bloom at late pistillate anthesis. B. Bloom at late pistillate anthesis, nearside part of spathe artificially removed. Scale bar = 2 cm.

fusiform, very pale yellow; pistils 1.5–2 mm in diameter, c. 1.5 mm tall, globose-cylindrical, crowded, yellowish; infrapistillar staminodes mostly one per pistil, (rarely two or staminodes in basal-most florets); stipitate with a globose head 0.8–1 mm in diameter, not quite equalling pistils in height, waxy white; style barely differentiated; stigma globose-capitate, about as wide as ovary, dirty white, wet at anthesis; sterile interstice tapering and narrower than the adjacent fertile zones, with 2–3 rows of hardly individually distinguishable rhomboidal ivory staminodes; staminate floret zone 7–8 cm long \times c. 1 cm wide at staminate anthesis, c. 2/3 length of spadix, cylindrical, tapering basally; amber droplets of resin secreted from between staminate florets prior to onset of staminate anthesis; staminate florets polygonal in plan view, 2.0–3 mm in diameter, each comprising 4(–6) truncate stamens each overtopped by large and flat connective tissue, ivory white; pollen in short strings, white, forming a paste when mixed with resin. Infructescences up to

10 together, declinate to pendent; spathe entirely persistent, deep red; peduncle matte dark brick red conspicuous striae; fruits not observed.

Eponymy

From Atlas, a Titan in Greek mythology condemned to hold up the heavens for eternity following the conflict between the Titans and the Olympians. In artistic depictions Atlas is portrayed supporting a celestial sphere on his shoulders. The name is coined in allusion to the globose lower spathe.

Distribution

Sarawak, restricted to the western Rejang basin, with the populations occurring as far east as the confluence of the Rejang and Balleh rivers.

Ecology

Homalomena atlas forms extensive patches, occasionally intermixed with *Homalomena mutans* P.C.Boyce & S.Y.Wong and *H. ibanorum* S.Y. Wong & P.C. Boyce, on open areas of the floor of humid to per-humid lowland dipterocarp forest over shales at between 50 and 100 m.

Notes

The twelve described Bornean species of the Hanneae Complex are as follows, listed by their occurrence from west to east:

Homalomena debilicrista Y.C.Hoe from the Matang Massif, on hard Palaeogene sandstones;

H. gastrofructa Y.C.Hoe, S.Y.Wong & P.C.Boyce from the Siburan Triassic-Jurassic Karst;

H. velutipedunculata Y.C.Hoe, S.Y.Wong & P.C.Boyce from Santubong on Paleogene sandstone; *H. atlas* (described here) from Kapit Palaeogene shales and at least partly co-occurring with *H. mutans*;

H. hanneae P.C.Boyce, S.Y.Wong & Fasih., *H. vivens* P.C.Boyce, S.Y.Wong & Fasih, and *H. sengkenyang* P.C.Boyce, S.Y.Wong & Fasih. from Batang Ai on Cretaceous shales, with *H. hanneae* extending into Kalimantan Barat;

H. josepii P.C.Boyce & S.Y.Wong from Bukit Setiam on Oligocene shales;

H. lambirensis S.Y.Wong & P.C.Boyce from Lambir on Miocene sandstones;

H. ardua P.C.Boyce & S.Y.Wong and *H. striatieopetiolata* P.C.Boyce & S.Y.Wong from Mulu, the first occurring on Eocene Melinau Karst, and the second on Palaeogene Setap shales and extending into Brunei.

ACKNOWLEDGEMENTS

Fieldwork was most recently under Sarawak Forestry Department Permission to Conduct Research on Biological Resources – Permit No. (67) JHS/NCCD/600-7/2/107/Jld.2 and Park Permit No WL33/2019. The collaboration and support of the Sarawak Forestry Department and the Sarawak Biodiversity Centre are gratefully acknowledged. The last author extends his thanks to Tan Sri Datuk Amar Leonard Linggi Anak Jugah and Malesiana Tropicals Sdn Bhd for continued support and encouragement.

REFERENCES

- Boyce PC, Wong SY. 2014. Studies on Homalomeneae (Araceae) of Borneo XVI: Three new shale-obligated *Homalomena* species. *Webbia*. 69(1): 59–67.
- Boyce PC, Wong SY. 2017. Studies on Homalomeneae (Araceae) of Peninsular Malaysia VI - *Homalomena electra*, a new species and the first non-Bornean occurrence of the Hanneae Complex. *Aroideana*. 49(3): 4–14.
- Hoe YC, Wong SY, Boyce PC, Wong MH, Chan MKY. 2011. Studies on Homalomeneae (Araceae) of Borneo VII: *Homalomena debilicrista* a new species from Sarawak, Malaysian Borneo, with observations on its pollination. *Plant Diversity and Evolution*. 129(1): 77–87.
- Hoe YC, Gibernau M, Maia ACD, Wong SY. 2016. Flowering mechanisms, pollination strategies and floral scent analyses of syntopically co-flowering *Homalomena* spp. (Araceae) on Borneo. *Plant Biology (Stuttgart)*. 18: 563–576.
- Hutchinson CS. 1989. *Geological Evolution of South-East Asia. Malaysia*. Oxford University Press.
- Hutchinson CS. 2005. *Geology of north-west Borneo: Sarawak, Brunei and Sabah*. Elsevier, The Netherlands.
- Ng KK, Ahmad Sofiman O, Boyce PC, Wong SY. 2011. Studies on Homalomeneae (Araceae) of Borneo VIII: Delimitation of additional informal suprageneric taxa for Sundaic *Homalomena*. *Webbia*. 66 (1): 21–28.
- Tate RB. 2001. The Geology of Borneo Island CD-ROM. *Persatuan Geologi Malaysia*. Geological Society of Malaysia.

- Wong SY, Boyce PC. 2017. Studies on Homalomeneae (Araceae) of Borneo XX: *Homalomena lambirensis*, a new locally endemic species from Sarawak with well-recorded pollination biology. *Nordic Journal of Botany*. 35(5): 557–562.
- Wong SY, Tan PJ, Ng KK, Othman AS, Lee HB, Fasihuddin BA & Boyce PC. 2013. Phylogeny of Asian *Homalomena* (Araceae) based on the ITS region combined with morphological and chemical data. *Systematic Botany*. 38: 589–599.