Studies on Homalomeneae (Araceae) of Borneo XVIII: Homalomena prolixa and H. scutata, two new species of doubtful affinity

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Studies on *Homalomeneae* (*Araceae*) of Borneo XVIII: *Homalomena prolixa* and *H. scutata*, two new species of doubtful affinity

Abstract

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Two taxonomically novel species of *Homalomena* (*Araceae: Homalomeneae*), *H. prolixa* S. Y. Wong & P. C. Boyce and *H. scutata* S. Y. Wong & P. C. Boyce, both of doubtful taxonomic affinity, are described from SW Sarawak, and from Brunei and adjacent NE Sarawak, Borneo, respectively. Both occur as lithophytes on forested sandstone bluffs.

Additional key words: aroids, Malaysian Borneo, Sarawak, Brunei

Introduction

Over the past several years a combination of fieldwork and the maintenance of an extensive living collection has enabled considerable progress in understanding the internal taxonomy of *Homalomena* (*Araceae*: *Homalomeneae*) such that, with the caveat that much is still needed in terms of testable analyses, we are increasingly confident of the informal species groups and species complexes so far delimited (Boyce & Wong 2008; Ng & al. 2011; Wong & Boyce 2011).

Inevitably species are sometimes encountered that are unassignable to any of the informal taxa currently recognized. In instances where these species have a unique set of characteristics, we are usually confident to create a new informal taxon (e.g. the Wongii Complex, Boyce & Wong 2011) in the belief that in time similar uniquely characterized species will be found. However, from time to time species are found that exhibit a confounding set of morphological distinctions that bridge between two or more informal taxa and are thus unassignable. We are here describing two such novelties.

Results and Discussion

Homalomena prolixa S. Y. Wong & P. C. Boyce, **sp. nov.** – Fig. 1.

Holotype: Malaysian Borneo, Sarawak, Kuching, Bau, Segong, Sungai Mutud, Mutud Waterfall, 01°33'11.5"N, 110°08'38.0"E, 24 Feb 2014, *P. C. Boyce & Jepom ak Tisai AR-4358* (SAR!; isotype: SBC!).

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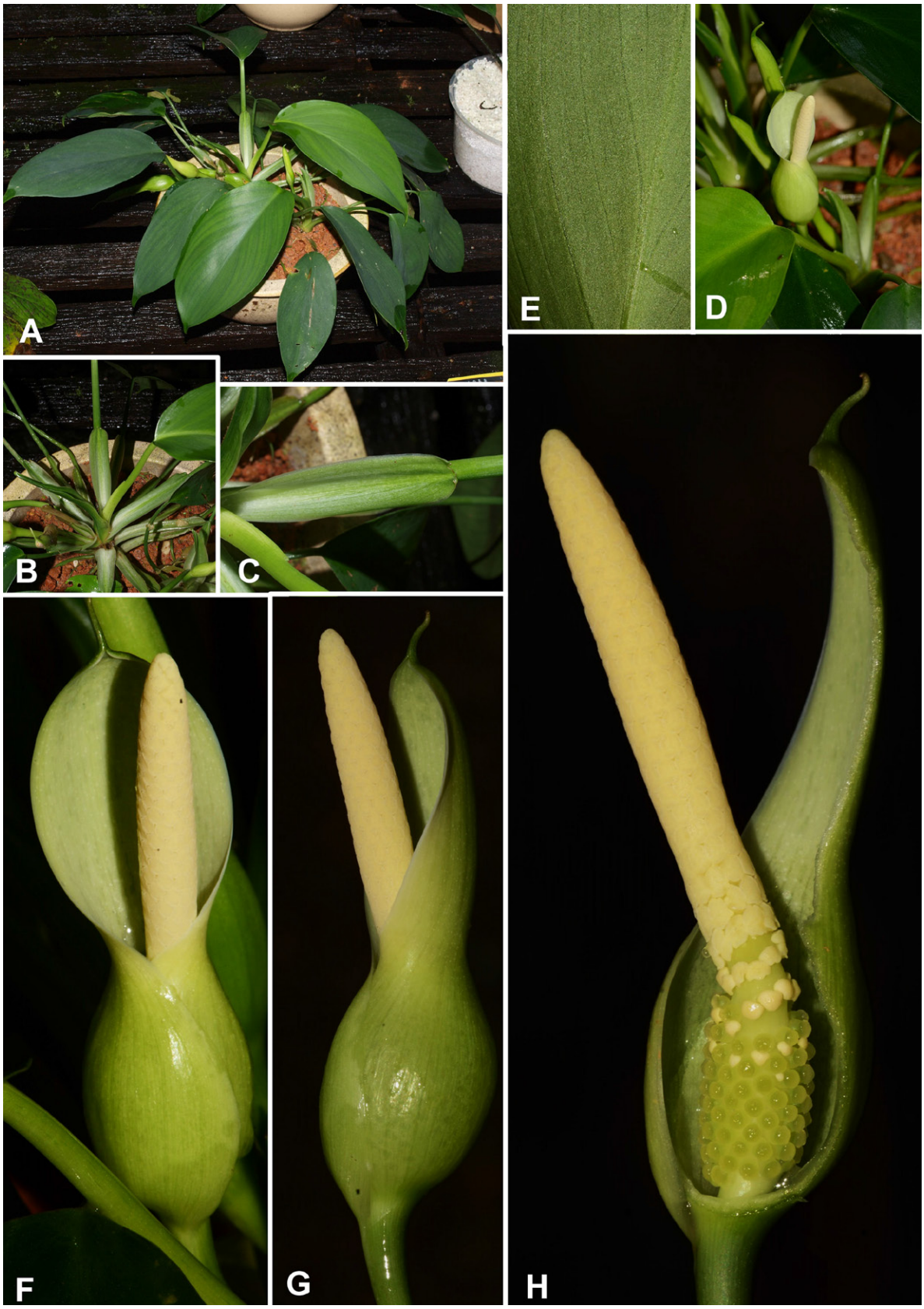

Fig. 1. *Homalomena prolixa* – A: type plant in cultivation; B: detail of petiole bases showing spreading habit and expanded flattened petiolar sheath wings; C: detail of flattened petiolar sheath; D: flowering cultivated plant; E: detail of leaf blade abaxial surface showing pellucid veins; F & G: inflorescence at pistillate anthesis; H: detail of pistillate and staminate flower zones at pistillate anthesis, spathe artificially removed; note extension and flexing of spadix above pistillate flower zone. – All from *P. C. Boyce & Jepom ak Tisai AR-4358*. – Photographs by Peter C. Boyce.

Diagnosis — *Homalomena prolixa* differs from all other described *Homalomena* species by the combination of open, spreading petiolar sheaths, leaf blades entirely lacking posterior lobes, a spathe with a marked constriction between the lower spathe and spathe limb, by the spadix extending and flexing in the region of the interstice with the lowermost whorls of staminate flowers individually separated, by the interpistillar staminodes present only in the upper two whorls of the pistillate flowers, and by the inflorescences smelling of lemon peel oil at anthesis. The celery-like smell of the vegetative tissues is also a new record for the genus.

Description — *Herbs* lithophytic, perennial, erect, to c. 20 cm tall, vegetative tissues strongly aromatic of celery. *Stem* pleionanthic, erect, highly congested, internodes to 0.5 cm long × c. 1 cm in diam. *Modules* subtended by a recurved 2-keeled prophyll c. 5 cm long × 1 cm wide. *Leaves* up to 15 together, spreading; *petiole* 10–12 cm long × c. 3 mm in diam. (terete portion of petiole distal to petiolar sheath), semi-glossy green with irregular darker streaks, basal dorsal portion (equivalent to ventral lowermost part of sheathing portion) of petiole slightly serrate-carinate; *petiolar sheath* wings spreading almost flat, 5–6.5 cm long × c. 1 cm wide, c. ½ length of petiole, wings long-persistent, rather membranous, slightly unequal, pale green with darker green veins; *leaf blade* broadly elliptic to somewhat ovate, 10–15 cm long × 5–6.5 cm wide, somewhat coriaceous, pale green abaxially, semi-matt dark green adaxially, base cuneate, apex acuminate and mucronate for c. 2 mm; *midrib* rounded-raised abaxially, particularly in portion of blade proximal to petiole, adaxially ± flush with blade, up to 3 mm wide; *primary lateral veins* c. 4 on each side, diverging at 35° from midrib, abaxially flush with and slightly darker than blade, adaxially flush with blade and scarcely differentiated; *interprimary veins* c. ½ width of primary lateral veins, irregularly interspersed between primaries, abaxially somewhat darker-pellucid and broken, adaxially flush with blade; *secondary venation* striate, almost invisible on both surfaces of blade; *tertiary venation* invisible; all veins running into a slightly thickened intramarginal vein. *Inflorescences* up to 6 together in a simple synflorescence, each subtended by a small narrowly triangular 2-keeled prophyll, erect at anthesis, later declinate; *peduncle* to c. 5 cm long × c. 3 mm in diam., expanding at insertion of spathe and there c. 5 mm wide, medium green. *Spathe* thinly stiff, with a distinct constriction between lower portion and spreading limb, tightly furled prior to anthesis, 6–7.5 cm long × c. 2 cm wide at anthesis, semi-glossy pale green externally, internally glossy greenish white; *lower spathe* broadly ovoid, c. 2.5 cm long × c. 2 cm in diam.; *limb* narrowly elliptic, somewhat hooded at anthesis, 4–5.5 cm long with a reflexed terminal mucro c. 10 mm long; lower spathe inflating and spathe limb gaping at pistillate anthesis, spathe limb opening wide at staminate anthesis and spadix extending and flexing at interstice to protrude from spathe; spathe later closing to re-enclose spadix. *Spadix* 5.5–6 cm long × c. 7 mm in diam., stipitate; *stipe* c. 2 mm long, pale green; *pistillate flower zone* weakly fusiform, c. ¼ length of spadix, c. 2 cm long; *pistils* of lower ¾ of zone quite crowded, upper ¼ with spirals separated by flexing/extension of interstice, upper two spirals with pistils alternating with stout staminodes, pistils globose, c. 1.5 mm tall × c. 1 mm in diam., pale green, *stigma* capitate, wider than pistil, c. 1 mm tall × 1.5 mm in diam., semi-translucent, glossy greenish; *interpistillar staminodes* irregularly globose, on a slender stalk with an expanded top, ivory; *sterile interstice* c. 2.5 mm long post-extension, mostly naked, pale green, with c. 2 whorls of staminodes, those of lowermost whorl of similar structure to, but larger than (c. 2 mm in diam.), those associated with uppermost pistils, staminodes of uppermost whorl resembling staminate flowers, c. 2 mm in diam., ivory; *staminate flower zone* narrowly fusiform-cylindric, c. ¾ length of spadix, exserted from lower spathe chamber, 3.5–5 cm long × 5–7 mm in diam., apex bluntly acute, yellowish ivory; *staminate flowers* mostly densely arranged, but lowermost 3 whorls slightly lax, trapezoid to sub-hexagonal in plan view, each flower consisting of 4 stamens. *Infructescence* with spathe remaining green. *Fruits* not observed.

Ecology — *Homalomena prolixa* occurs as a lithophyte on damp, shaded, vertical sandstone bluffs under moderately humid hill forest at an altitude of c. 130 m.

Distribution — *Homalomena prolixa* is to date known only from the type locality in SW Sarawak.

Etymology — From Latin, *prolixus* (feminine: *prolixa*), meaning stretched or elongated, and referring to the elongating spadix interstice of this species.

Remarks — *Homalomena prolixa* combines characteristics of three informal taxon complexes, along with, to date, a unique arrangement of the interpistillar staminodes. Molecular analyses are wanting. In overall appearance, non-flowering plants of *H. prolixa* are highly reminiscent of species of the Chamaecladon Supergroup, although, in the constricted spathe and interpistillar staminodes equalling the height of the associated pistil, the inflorescences are assignable to the Cyrtocladon Supergroup. The pistillate zone with only the uppermost two rows of pistils each with an associated staminode is unique for the genus. A lemon-peel-oil-like floral odour is rare in the genus, although shared with *H. matangae* Y. C. Hoe & al. (Cyrtocladon Supergroup: Giamensis Complex).

Plants yet to be encountered fertile but vegetatively closely resembling *Homalomena prolixa*, although differing by the leaf blades being adaxially densely grey banded, are known from limestone at Tepoi, in SW Sarawak, close to the border with Kalimantan Barat.

Homalomena scutata S. Y. Wong & P. C. Boyce, **sp. nov.** – Fig. 2 & 3.
Holotype: Brunei, Belait, Labi, Kampung Teraja, Sungai Teraja, 04°17'N, 114°25'E, 6 Jun 1989, *P. C. Boyce 253* (BRUN – B 008 027!; isotype: K!).

Diagnosis — In overall appearance and in lacking interpistillar staminodes *Homalomena scutata* most closely resembles *H. treubii* Engl., which differs in being almost twice as large and in lacking pellucid vein-like glands on the leaf blade undersurface. *Homalomena scutata* is also highly reminiscent of *H. havilandii* Ridl., although *H. havilandii* has conspicuous interpistillar staminodes. By lacking interpistillar staminodes *H. scutata* resembles species both of the Geniculata Supergroup (e.g. *H. geniculata* M. Hotta) and of the Insignis Complex (for example *H. cowleyae* P. C. Boyce & S. Y. Wong) of the Cyrtocladon Supergroup. From all these taxa *H. scutata* is immediately distinguished by the leaf blades being pendent from the tips of the petioles.

Description — *Herbs* lithophytic, perennial, erect, to c. 50 cm tall, but usually c. ½ this size, vegetative tissues strongly aromatic (terpenes). *Stem* pleionanthic, erect and congested in young adult plants, later elongated and pendulous with greater portion naked, with active portion ascending and bearing clusters of leaves at tips, internodes to 3 cm long × c. 1 cm in diam. *Modules* subtended by a stout 2-keeled prophyll c. 6 cm long × 1.5 cm wide. *Leaves* up to 8 together, with blades pendulous from tips of erect petioles; *petiole* 12–25 cm long × c. 3 mm in diam., sub-terete, distal-most part very weakly D-shaped in cross-section, semi-glossy medium green with small broken darker longitudinal streaks; *petiolar sheath* open, c. 3 cm long, c. 1/5 length of petiole, wings c. 5 mm wide at base, long-persistent, paler green than petiole; *leaf blade* ovate, 15–19 cm long × 10–18 cm wide, somewhat coriaceous, paler green abaxially, semi-matt dark green adaxially, base rounded with a very slight indentation at petiole insertion, apex acute and then mucronate for c. 2 mm; *midrib* slightly rounded-raised abaxially, adaxially very slightly impressed, up to 3 mm wide; *primary lateral veins* 6 or 7 on each side, diverging at c. 40° from midrib, abaxially very weakly raised and darker than blade, appearing pellucid, adaxially ± flush with blade; *interprimary veins* c. ½ width of primary lateral veins, very much more numerous, flush with blade adaxially, pellucid; *secondary venation* almost invisible in fresh material, barely visible in dried specimens; *tertiary venation* invisible; all veins running into a weakly defined thickened intramarginal vein. *Inflorescences* up to 6 together, each subtended by a small narrowly triangular prophyll, suberect at anthesis with spathe somewhat nodding, smelling of anise; *peduncle* to 9–12 cm long × c. 3 mm in diam., semi-glossy medium green with small broken darker longitudinal streaks; *Spathe* stiff, c. 6 cm long × c. 2 cm wide at anthesis, exterior semi-glossy pale green with darker streaks, interior greenish white; *lower spathe* ovoid, subequal to limb; *limb* narrowly triangular, acuminate, with a terminal mucro c. 3 mm long; lower spathe inflating and spathe limb spreading at pistillate anthesis, spathe limb opening flat at staminate anthesis with spadix extending and protruding; spathe later closing to re-enclose spadix. *Spadix* 4–5 cm long × c. 6 mm in diam., stipitate; *stipe* obliquely inserted on peduncle, c. 8 mm long on its longest side, c. 2 mm in diam., glossy pale green to whitish; *pistillate flower zone* weakly fusiform, nearly ½ length of spadix, c. 2 cm long; *pistils* densely arranged, globose, c. 1.5 mm tall × c. 1 mm in diam., greenish white, *stigma* convex topped, equalling ovary, c. 1 mm tall × 1.5–2 mm in diam., semi-translucent, glossy greenish; *interpistillar staminodes* absent; *sterile interstice* 1–2 mm long, contiguous with pistillate and staminate zones, with 1–3 incomplete rows of rounded to slightly rhombohexagonal glossy white staminodes; *staminate flower zone* narrowly conic, c. ½ length of spadix, entirely exserted from lower spathe chamber, 2.5–3 cm long, apex obtuse, ivory; *staminate flowers* densely arranged, trapezoid to hexagonal in plan view, each flower consisting of 4 stamens, lowermost 1 or 2 rows of flowers with scattered single ellipsoid staminodes replacing part of individual flowers. *Infructescence* with spathe remaining green. *Fruits* not observed.

Ecology — *Homalomena scutata* occurs as a lithophyte on semi-shaded vertical sandstone bluffs under humid lowland to hill forest at altitudes of 35–400 m.

Distribution — *Homalomena scutata* occurs in SW and SE Brunei and adjacent NE Sarawak.

Etymology — From Latin, *scutum* (an oblong shield), hence *scutatus* (feminine: *scutata*), meaning armed with [an] oblong shield, and used by way of describing the leaf blades that both resemble and are held like a Norman 'kite' shield.

Remarks — In overall appearance *Homalomena scutata* is highly reminiscent of the W Sarawak *H. havilandii*, although, as remarked in the above diagnosis, the presence versus absence of interpistillar staminodes is differential between *H. scutata* (absent) and *H. havilandii* (present).

Additional specimens seen (paratypes) — Malaysian Borneo: Sarawak: Miri: Marudi, Long Lama, Mulu National Park (N.P.), Long Langsat, Sungai Langsat, draining into the Sungai Tutoh 04°00'03.5"N, 114°48'49.8"E, 9 Aug 2006, *P. C. Boyce & al. AR-1982* (SAR, SBC). — Limbang: Nanga Medamit, Mulu N.P., Mentawai Research Station, Sungai Abun Kanan, tributary from Sungai Terikan, 04°14'08.7"N, 114°52'17.3"E, 1 Oct 2007, *P. C. Boyce & al. AR-2267* (SAR, SBC); Nanga Medamit, Mulu N.P., Mentawai Research Station, Sungai Kiri, tributary from Sungai Terikan, 04°14'07.4"N,

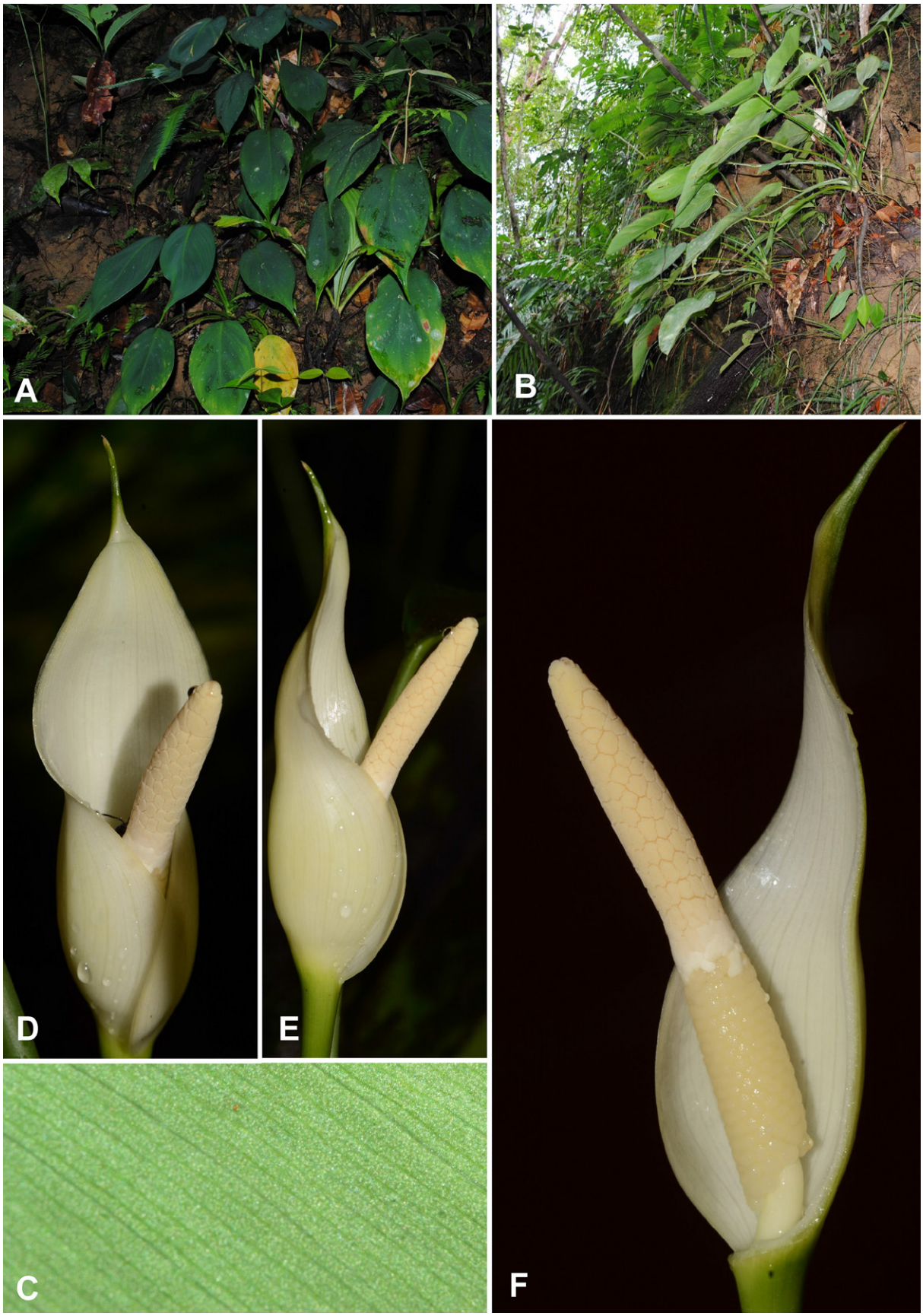

Fig. 2. *Homalomena scutata* – A & B: plants in habitat; C: detail of leaf blade abaxial surface showing pellucid veins; D & E: inflorescence at pistillate anthesis; F: detail of pistillate and staminate flower zones at pistillate anthesis, spathe artificially removed. – A & C–F from *P. C. Boyce & al. AR-1982*; B from *P. C. Boyce & S. Y. Wong AR-3524*. – Photographs by Peter C. Boyce.

Fig. 3. *Homalomena scutata* – holotype specimen: *P. C. Boyce 253* (BRUN – B 008 027). – Photograph by Peter C. Boyce.

114°52'27.6"E, 2 Oct 2007, *P. C. Boyce & al. AR-2298* (SAR, SBC); Nanga Medamit, Mulu N.P., Melinau Gorge, 04°08'12.6"N, 114°54'04.7"E, 3 Oct 2007, *P. C. Boyce & al. AR-2304* (SAR, SBC); ibid., *P. C. Boyce & al. AR-2313* (SAR, SBC).

Brunei: Belait: Labi, trail to summit of Bukit Teraja, 04°18'27.6"N, 114°26'14.3"E, 23 Dec 2010 *P. C. Boyce & Wong Sin Yeng AR-3254* (BRUN, SAR, SBC). — Temburong: Batu Apoi, Bukit Gelagas, ridge running west of landing place, 04°34'N, 115°15"E, 26 Oct 1991, *D. A. Simpson 2362* (BRUN – B 008 318; K); Batu Apoi, Bukit Gelagas, Sungai Arur, upstream from landing place, 04°34'N, 115°15'E, 28 Oct 1991, *D. A. Simpson 2493* (BRUN – B 008 025; K).

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References

Boyce P. C. & Wong S. Y. 2008: Studies on *Homalomeneae* (*Araceae*) of Borneo I: four new species and speculation on informal species groups in Sarawak. – Gard. Bull. Singapore **60:** 1–29.

Ng K. K., Sofiman O., Boyce P. C. & Wong S. Y. 2011: Studies on *Homalomeneae* (*Araceae*) of Borneo VIII: delimitation of additional informal suprageneric taxa for Sundaic *Homalomena.* – Webbia **66:** 21–28.

Wong S. Y. & Boyce P. C. 2011: Studies on *Homalomeneae* (*Araceae*) of Borneo X: two new *Homalomena* species from Brunei, and a new informal species complex for Supergroup Cyrtocladon. – Webbia **66:** 133–141.