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Studies on *Homalomeneae* (*Araceae*) of Sumatera IV: Three new ornamental *Homalomena* (*Chamaecladon* clade) species

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Abstract: Three new species of *Homalomena* (*Chamaecladon* clade) are described and illustrated from Sumatera (Sumatra), Indonesia: *H. hasei* P. C. Boyce & S. Y. Wong, *H. mobula* P. C. Boyce & S. Y. Wong and *H. plicata* P. C. Boyce & S. Y. Wong.

Key words: *Araceae*, aroids, *Homalomena*, *Chamaecladon* clade, *Homalomena hasei*, *Homalomena mobula*, *Homalomena plicata*, new species, Indonesia, Sumatera, Sumatra, granite, limestone

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Introduction

The *Homalomena Chamaecladon* clade (Wong & al. 2013) comprises primarily small-growing tufted or creeping plants with a diminutive unconstricted spathe, pistillate flowers with a staminode only half as tall as the associated pistil, and staminate flowers composed of two (rarely three) stamens in which the anther connective is not expanded into an overarching cap. *Chamaecladon* species are primarily lithophytic, occasionally rheophytic, or, if terrestrial, then commonly occurring on forested steep soil banks where, perhaps, the minute seeds can adhere and seedlings are less likely to be buried by leaf litter. One species, *Homalomena limnogenia* P. C. Boyce & S. Y. Wong, is a colonial helophyte (Boyce & Wong 2013). Where such data exist, species are known to be geologically obligated.

Taxonomic understanding of *Chamaecladon* species is hampered by the poor state of preservation of almost all of the historical types, exacerbated by often miniscule

ephemeral (and therefore cryptic) floral parts, coupled with decidedly incomplete understanding of vegetative variation. With the notable exception of Alderwerelt van Rosenburgh (1922), who published 14 new *Chamaecladon* species accompanied by precise descriptions with useful diagnostic illustrations, mainly prepared from living plants in Buitenzorg (now Bogor) Botanic Gardens, historical published accounts are comprehensively inadequate, not least Furtado's partial "revision" (1939). Against such formidable circumstances, it might appear imprudent to propose and publish further new species were it not for the fact that there exist highly distinctive taxa clearly unmatched with any of the pre-existing published names. In recent years a start has been made to formally publish such evident novelties (Bararuddin & Boyce 2005, 2010; Bogner 2007; Boyce & Wong 2013; Boyce & al. 2010; Kartini & al. 2015; Kurniawan & al. 2011a, b; Wong & Boyce 2011, 2012). We here continue this process with the formal description of three remarkable newly recognized species from Sumatera.

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Results and Discussion

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

Holotype: Indonesia, Sumatera Barat, locality withheld for conservation purposes, *Keisuke Hase AR-4759* (ANDA!; isotypes: SAR!, SBC!).

Diagnosis — *Homalomena hasei* approaches *H. doctersii* Alderw., but differs by having the leaf blade coarsely ciliate over its entire upper surface (vs ciliate only along the margins), the leaf blade margin flat (vs undulate), the petiole much longer, 4–5 cm long (vs 3–4 mm long), and the peduncle and spathe exterior glabrous (vs puberulent).

Description — *Herbs* lithophytic, ultimately to c. 20 cm tall, initially forming leaf rosettes, later loose clumps, later still naked older stems branching and sinuously erect to pendulous, with leafy tips ascending. *Stem* to 5 mm in diam., modules pleioanthic, active parts bright green, older portions with pale brown corky epidermis, internodes of leafy portions obscured by overlapping leaf bases, not conspicuous, naked stems with moderately conspicuous circumferential scars. *Leaves* several together, c. 10 per active stem tip; *petiole* bright green, weakly D-shaped in cross-section, 4–5 cm long, c. ½ length of blade, sheathing in proximal ½, very slightly longitudinally ribbed; *petiolar sheath* fully adnate to petiole, rather narrow, margin inrolled, hyaline, undulate; *leaf blade* semi-glossy bright green adaxially, paler green and very slightly glaucous abaxially, narrowly oblanceolate-elliptic, 7.5–11 cm long × 2–3.5 cm wide, thinly leathery, coarsely ciliate over adaxial surface, base cuneate, apex acute, apiculate for c. 1 mm; *midrib* raised abaxially, very slightly impressed adaxially; *primary lateral veins* c. 5 on each side, diverging at c. 30° from midrib, weakly raised abaxially, slightly impressed adaxially; *interprimaries* barely visible; *secondary veins* not visible in fresh material, very faintly visible in dried specimens. *Inflorescence* up to 7 together in a synflorescence, without detectable odour, opening sequentially; *peduncle* inserted obliquely (to ventral side) on spathe, erect at anthesis, later declinate, pale green, occasionally flushed dull red, slender, c. 3.5 cm long × c. 1 mm in diam. *Spathe* c. 2 cm long × c. 5 mm wide across base, limb sloping dorsally toward tip, not constricted, exterior smooth, ventrally semi-glossy yellowish green, dorsally medium green, interior shiny pale green, apex with a terminal short brown mucro to 1.5 mm long, spathe inflating at anthesis and opening by a broad slit, later closing and enclosing spadix. *Spadix* stipitate, slightly curving conic, to 1.8 cm long × c. 2.5 mm in diam., fertile to apex, stipe very pale green, c. 1 mm long, expanding into smooth, umbonate spathe/peduncle junction; *pistillate flower zone* c. 5 mm long; *pistils* somewhat lax, greenish white, laterally compressed globose-lageniform, c. 1 mm tall × 0.7–0.8 mm in diam., stigma sessile, 0.2–0.3 mm

in diam., producing a conspicuous droplet at anthesis; *pistillate flowers* other than basal row not associated with a staminode; *interpistillar staminodes* very pale yellow, almost spherical with a very slender stipe, c. 0.3 mm in diam.; *suprapistillar interstice* absent; *staminate flower zone* c. 1.5 cm long, apex acute; *staminate flowers* densely arranged, each consisting of 2 stamens, thecae cream with apex almost transparent, globose, c. 0.3 mm long × c. 0.4 mm wide, each opening by a broad terminal pore, pollen powdery. *Fruiting spathe* declinate by flexing of basal portion of peduncle, pale yellow-green. *Fruits* and *seeds* not observed.

Distribution — Sumatera Barat. Owing to the ornamental nature of *Homalomena hasei*, the precise locality is withheld to ensure populations are safeguarded from commercial exploitation.

Ecology — *Homalomena hasei* occurs lithophytically at the base of constantly wet limestone cliffs and karst stacks in lowland humid forest.

Eponymy — Named for Keisuke Hase, who was instrumental in alerting us to the existence of this species.

Discussion — *Homalomena hasei* is likely most closely related to *H. doctersii*, described from cultivated plants in the Bogor Botanic Gardens, originally collected from granite cliffs in the Harau Valley, Sumatera Barat.

Homalomena mobula P. C. Boyce & S. Y. Wong, **sp. nov.** – Fig. 2.

Holotype: Indonesia, Sumatera Barat, locality withheld for conservation purposes, *Keisuke Hase AR-4760* (ANDA!; isotypes: SAR!, SBC!).

Diagnosis — *Homalomena mobula* is most similar to *H. asperifolia* Alderw. by having the leaf blade adaxially asperous, but is differentiated by the much larger, to 23 × 8 cm (vs 16 × 4 cm), broadly oblanceolate (vs elliptic), succulent (vs thinly leathery) leaf blade with recurved, irregularly denticulate (vs flat, smooth) margin, and the plum-purple (vs green), slender (vs broadly triangular), externally longitudinally ribbed (vs smooth) spathe, and the narrow (vs broadly capitate) stigmas.

Description — *Herbs* lithophytic, rosette-forming, to c. 10 cm tall × c. 40 cm across. *Stem* highly condensed, in older plants, epigeal and creeping to c. 10 cm long × c. 2 cm in diam., modules pleioanthic, internodes obscured by overlapping leaf bases, not conspicuous. *Leaves* several together, c. 7 per stem; *petiole* dark green, flushed reddish, stoutly subterete to D-shaped in cross-section, 4–6 cm long × c. 7 mm in diam., c. ⅛ length of blade, sheathing in proximal ⅓, coarsely asperous with a glistening crystalline appearance; *petiolar sheath* ad-

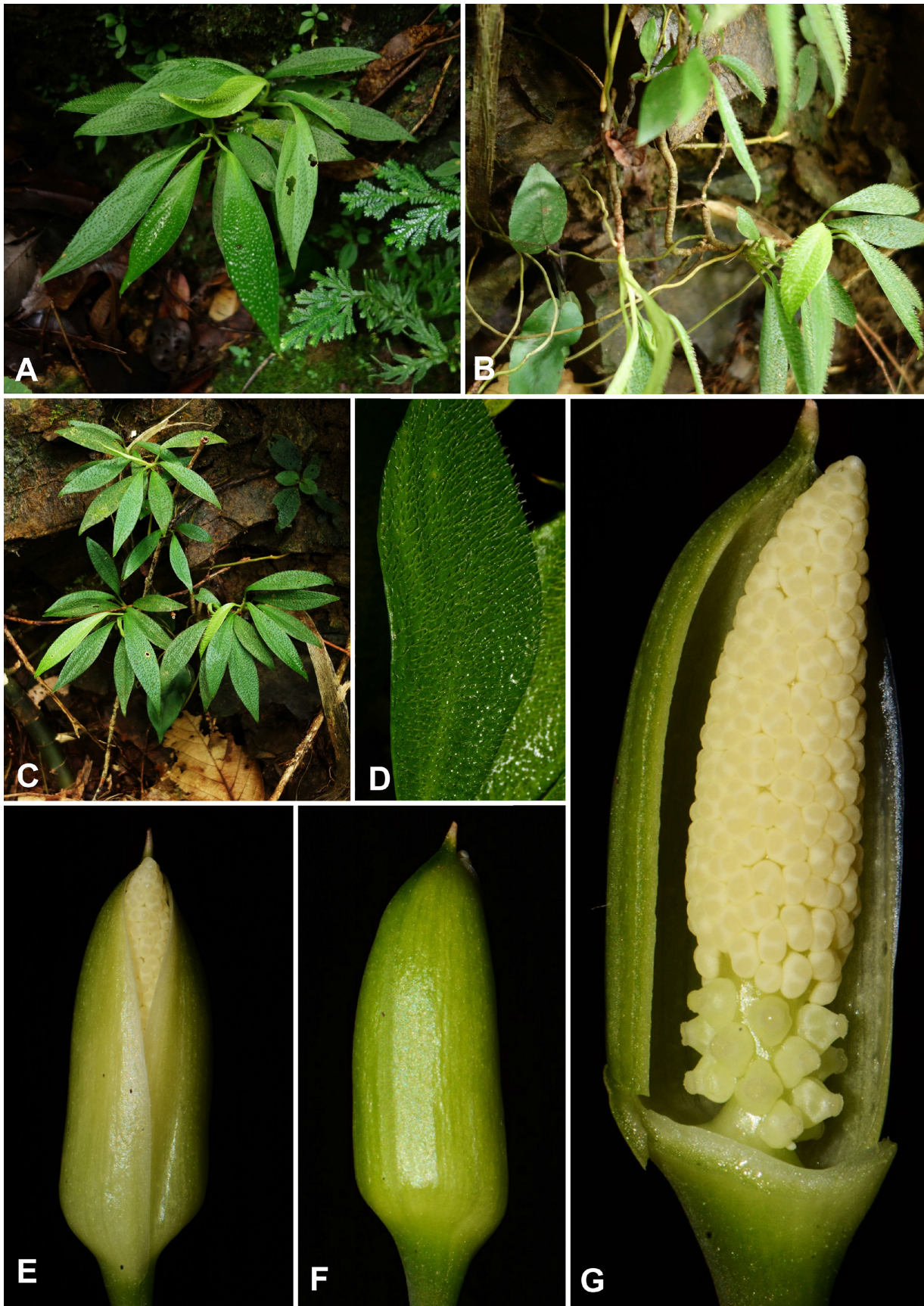


Fig. 1. *Homalomena hasei* – A & C: plants in habitat; B: older plant showing distinctive pendulous stems; note the corky epidermis; D: leaf blade, adaxial surface; E & F: inflorescence at pistillate anthesis; G: inflorescence at pistillate anthesis, part of spathe artificially removed to reveal spadix. – All from Keisuke Hase AR-4759. – Photographs A–C by Keisuke Hase; D–G by Peter C. Boyce.

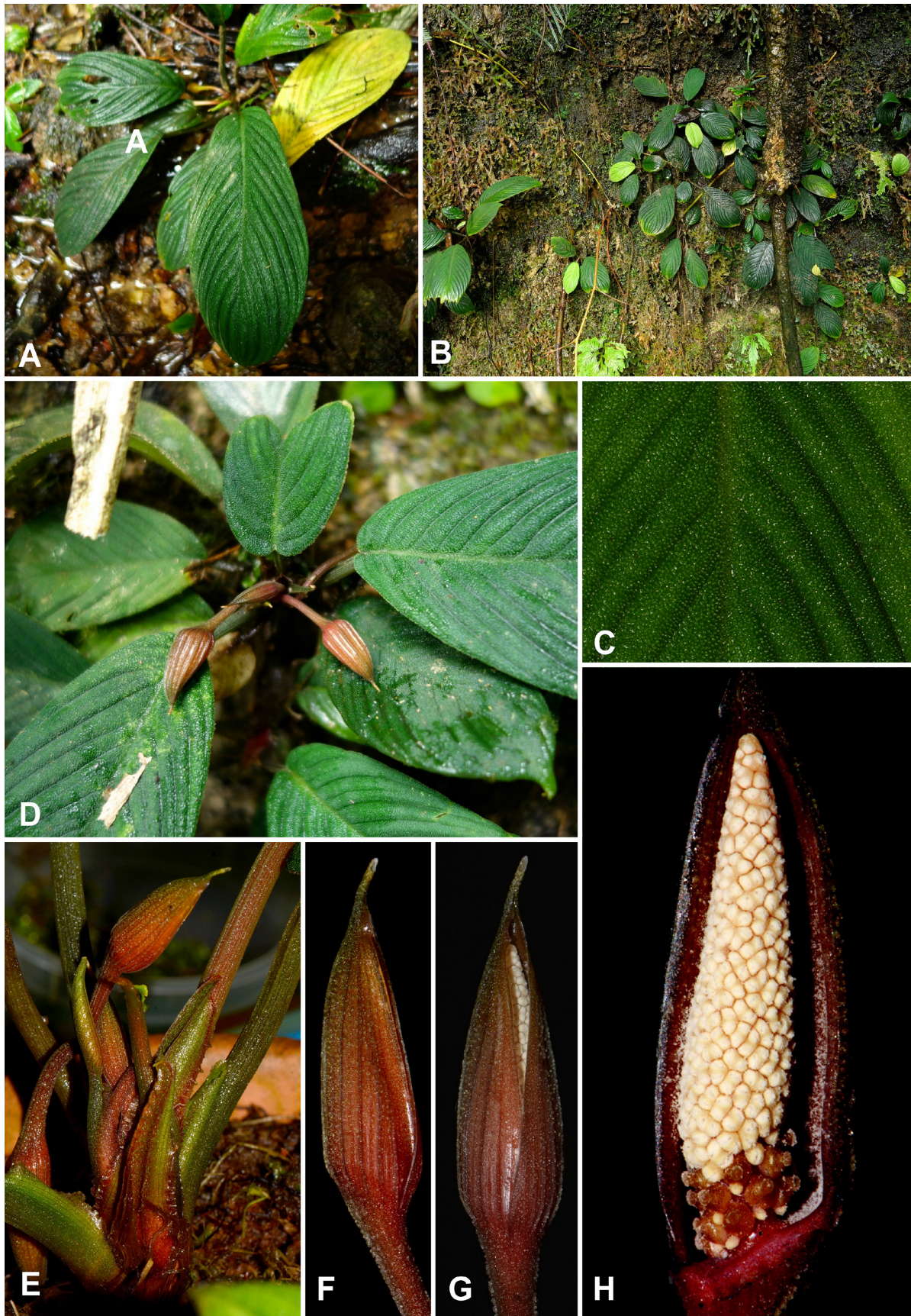


Fig. 2. *Homalomena mobula* – A & B: plants in habitat; C: leaf blade, detail of adaxial surface; D: flowering plant; E: detail of flowering plant; F & G: inflorescence, spathe exterior; H: inflorescence at pistillate anthesis, part of spathe artificially removed to reveal spadix. – All from Keisuke Hase AR-4760. – Photographs A–C by Keisuke Hase; D–H by Peter C. Boyce.

nate to petiole, greenish with varying amounts of reddish brown speckles and staining, c. 2 cm long, rather wide, margin inrolled, hyaline, undulate; *leaf blade* pale green abaxially, deep green adaxially, broadly oblanceolate, 13–23 cm long × 4–8 cm wide, succulent, somewhat crystalline abaxially, coarsely asperous adaxially, base rounded, truncate or cordidulous, margin recurved and irregularly dentate, apex blunt and apiculate for c. 3 mm; *midrib* raised abaxially, somewhat impressed and paler than surrounding tissue adaxially; *primary lateral* veins c. 12 on each side, diverging at c. 45° from midrib, raised abaxially, impressed adaxially creating a quilted appearance to blade; *interprimaries* slightly finer and ± regularly alternating with primary veins; *secondary veins* very fine. *Inflorescence* up to 5 together in a synflorescence, without detectable odour, opening sequentially; *peduncle* inserted obliquely (to ventral side) on spathe, semi-erect at anthesis, later declinate, reddish brown, slender, c. 2 cm long × c. 3 mm in diam., asperous and longitudinally ribbed. *Spathe* c. 2 cm long × c. 4 mm wide across base, limb not constricted, exterior reddish brown, asperous and longitudinally ribbed, interior shiny deep red, apex with a terminal mucro to 3 mm long, spathe inflating at anthesis and opening by a very narrow slit, later closing and enclosing spadix. *Spadix* sessile, to 2 cm long × c. 3 mm in diam., fertile to apex; *pistillate flower zone* c. 1.5 mm long; *pistils* few, usually only 2–3 spirals, greenish with very dense reddish speckling, globose-lageniform, c. 1 mm tall × 0.7–0.8 mm in diam., stigma sessile, 0.2–0.3 mm in diam., producing a large droplet at anthesis; *pistillate flowers* each associated with 1 staminode, this cream, almost spherical with a slender stipe, c. 0.3 mm in diam.; *suprapistillar interstice* absent; *staminate flower zone* slender conic, c. 1.7 cm long, apex acute; *staminate flowers* densely arranged, each consisting of 2 stamens, thecae cream, globose, c. 0.3 mm long × c. 0.4 mm wide, opening by a narrow terminal pore, connective darker, pollen powdery. *Fruiting spathe* declinate by flexing of basal portion of peduncle, reddish brown. *Fruits* and *seeds* not observed.

Distribution — Sumatera Barat. Owing to the decidedly decorative qualities of *Homalomena mobula* the precise location is withheld to forestall commercial abuse.

Ecology — *Homalomena mobula* occurs lithophytically on moss-covered vertical granite river banks in humid hill forest.

Etymology — The epithet is coined from *Mobula*, a genus of ray in the Myliobatidae, in allusion to the similarity of the leaf blade texture in *Homalomena mobula* to the placoid scales (dermal denticles) occurring on the skin of cartilaginous fishes such as sharks, rays and chimaeras.

Discussion — *Homalomena mobula* is one of the most distinctive *Homalomena* species yet described, in addition

to being highly decorative. The texture of the upper surface of the leaf blade is exceptional, although leaf blades of *H. asperifolia* are of somewhat similar texture (Fig. 4).

Homalomena plicata P. C. Boyce & S. Y. Wong, **sp. nov.** – Fig. 3.

Holotype: Indonesia, Sumatera Barat, locality withheld for conservation purposes, *Keisuke Hase AR-4762* (ANDA!; isotypes: SAR!, SBC!).

Diagnosis — The plicate leaf blades serve to differentiate *Homalomena plicata* from all other described *Homalomena* species.

Description — *Herbs* lithophytic, with pendulous leaves. *Stem* to 1.5 cm in diam., modules pleionanthic, new modules subtended by a c. 5 cm × 1 cm, 2-keeling prophyll, internodes obscured by overlapping leaf bases. *Leaves* few together, c. 5 per stem; *petiole* coppery red, D-shaped in cross-section, 6–11 cm long × c. 6 mm in diam., c. ½ length of blade, sheathing in proximal 1/12, smooth; *petiolar sheath* fully adnate to petiole, short, rather narrow, margin inrolled, hyaline, undulate; *leaf blade* pale coppery brown when newly emerged, maturing semi-glossy medium green adaxially, paler green abaxially, elliptic, 9–22 cm long × 3.5–8 cm wide, stiffly leathery, conspicuously plicate, base cuneate, apex acuminate, apiculate for c. 1 mm; *midrib* sharply raised abaxially, slightly impressed adaxially; *primary lateral* veins c. 12 on each side, diverging at c. 45° from midrib, always involved with raised plications abaxially, deeply impressed adaxially; *interprimaries* weakly visible; *secondary veins* not visible in fresh material, faintly visible in dried specimens. *Inflorescence* up to 10 together in a synflorescence, without detectable odour, opening sequentially; *peduncle* erect at anthesis, later declinate, deep red, slender, c. 3.5 cm long × c. 3 mm in diam. *Spathe* c. 2.5 cm long × c. 3 mm wide across base, limb very narrowly triangular, not constricted, exterior longitudinally slender ribbed, deep red, interior shiny purple-red, apex with a terminal short mucro to 1.5 mm long, spathe inflating at anthesis and opening by a broad slit, later closing and enclosing spadix. *Spadix* stipitate, slightly sinuous slender conic, to 2 cm long × c. 2 mm in diam., fertile to apex, stipe medium red, c. 1.2 mm long; *pistillate flower zone* c. 5 mm long; *pistils* rather lax, white stained reddish, laterally compressed globose-lageniform, c. 1 mm tall × 0.7–0.8 mm in diam., stigma sessile, 0.2–0.3 mm in diam., producing a conspicuous droplet at anthesis; *pistillate flowers* mostly each associated with a single staminode; *interpistillar staminodes* almost sessile, very pale yellow, almost spherical, c. 0.2 mm in diam.; *suprapistillar interstice* absent; *staminate flower zone* c. 1.5 cm long, apex acute; *staminate flowers* densely arranged, each consisting of 2 stamens, thecae cream with

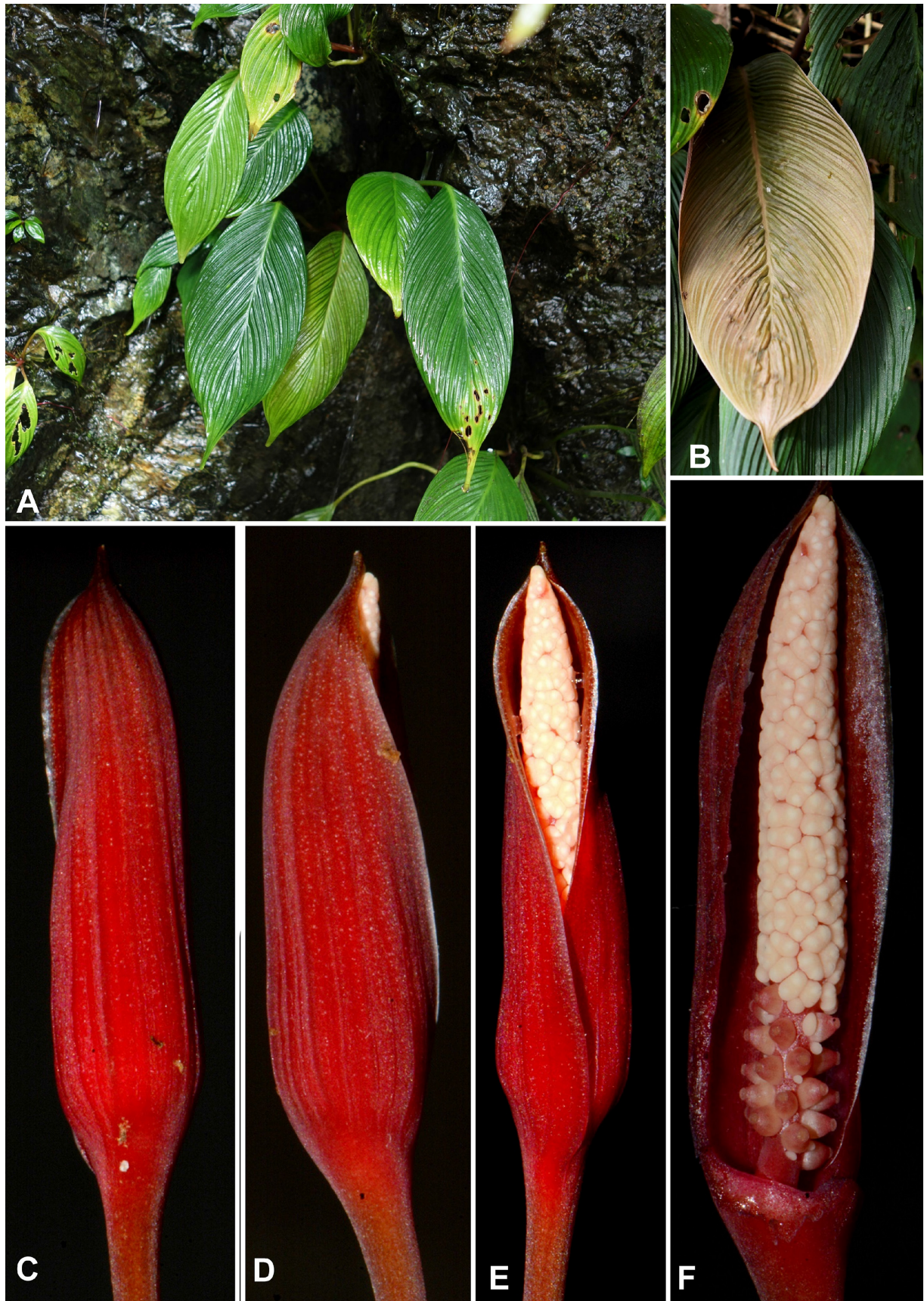


Fig. 3. *Homalomena plicata* – A: plant in habitat; B: newly emerged leaf; C–E: inflorescence, spathe exterior; F: inflorescence at pistillate anthesis, part of spathe artificially removed to reveal spadix. – All from *Keisuke Hase AR-4762*. – Photographs A & B by Keisuke Hase; C–F by Peter C. Boyce.

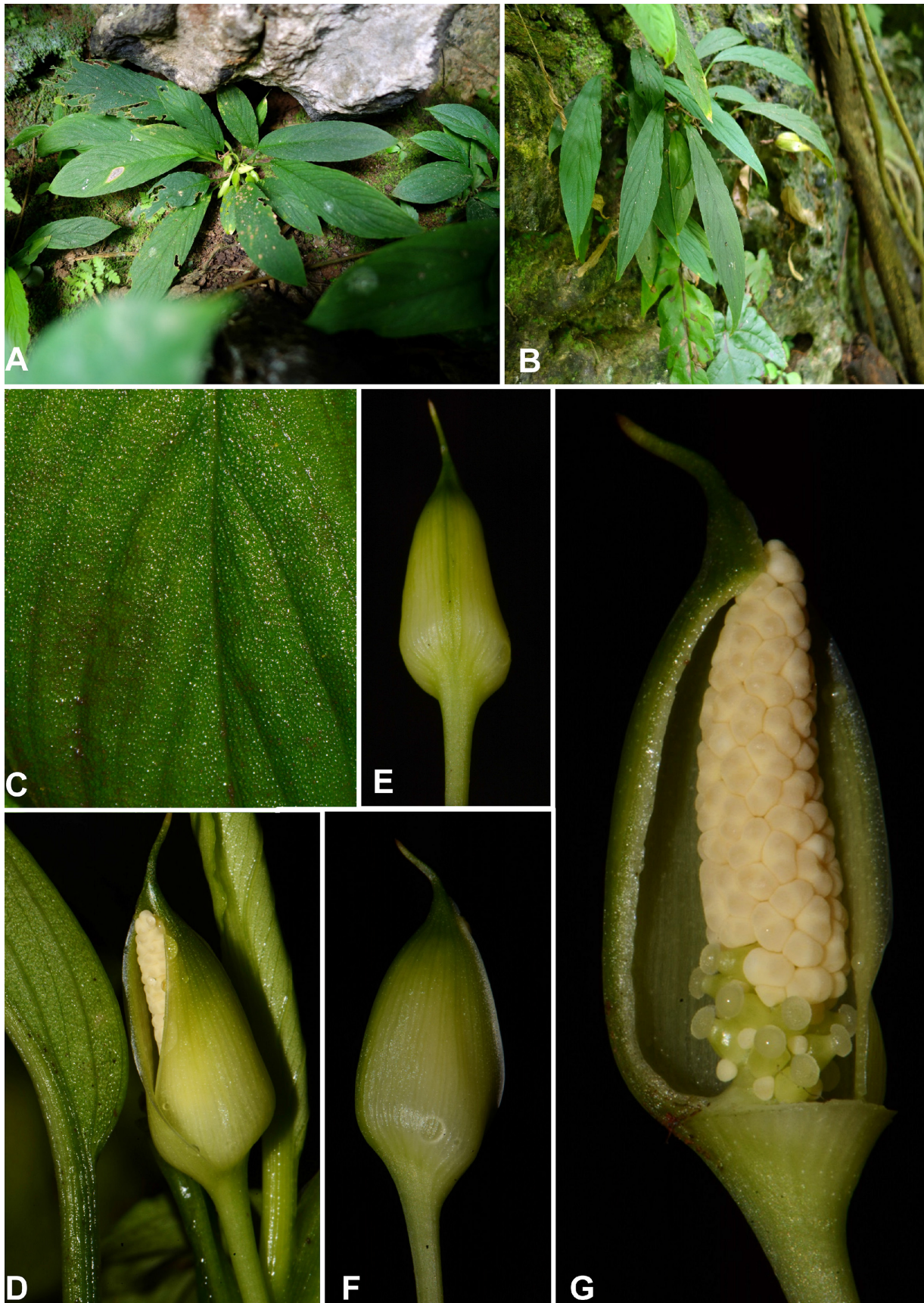


Fig. 4. *Homalomena asperifolia* – A & B: plants in habitat; C: leaf blade, adaxial surface; D–F: inflorescence, spathe exterior; G: inflorescence at pistillate anthesis, part of spathe artificially removed to reveal spadix. – All from *Keisuke Hase AR-4761*. – Photographs A & B by Keisuke Hase; C–G by Peter C. Boyce.

apex paler, globose, c. 0.3 mm long × c. 0.4 mm wide, each opening by a broad terminal pore, pollen powdery. *Fruiting spathe* declinate by flexing of basal portion of peduncle, deep red. *Fruits* and *seeds* not observed.

Distribution — Sumatera Barat. Owing to the potential commercial appeal of *Homalomena plicata* the locality is not detailed.

Ecology — *Homalomena plicata* occurs lithophytically on constantly wet granite bluffs under humid hill forest.

Etymology — The epithet *plicata* is a Latin adjective meaning folded into pleats or furrows – used to describe the leaf blade.

Discussion — *Homalomena plicata* is so far the only known species of aroid with a truly plicate leaf blade.

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References

- Alderwerelt van Rosenburgh C. R. W. K. van 1922: New or noteworthy Malayan *Araceae* II. – Bull. Jard. Bot. Buitenzorg, sér. 3, **4**: 163–229.
- Baharuddin S. & Boyce P. C. 2005: A remarkable new species of *Homalomena* (*Araceae: Homalomenae*) from Peninsular Malaysia. – Gard. Bull. Singapore **57**: 7–11.
- Baharuddin S. & Boyce, P. C. 2010: Studies on *Homalomenae* (*Araceae*) of Peninsular Malaysia I: *Homalomena asmae*, a new species from Perak. – Acta Phytotax. Geobot. **60**: 163–166.
- Bogner J. 2007. A new *Homalomena* species (*Araceae*) from Sumatera. – Fol. Malesiana **8**: 11–15.
- Boyce P. C. & Wong S. Y. 2013: Studies on *Homalomenae* (*Araceae*) of Sumatera II: *Homalomena limnogenae*, a novel species from Pulau Belitung, and the first record of colonial helophytism in the *Homalomena* Chamaecladon Supergroup. – Webbia **68**: 77–79.
- Boyce P. C., Wong S. Y. & Fasihuddin B. A. 2010: Studies on *Homalomenae* (*Araceae*) of Borneo II: The *Homalomena* of Nanga Sumpa (Batang Ai) – Novel & pre-existing taxa, and notes on Iban usages. – Gard. Bull. Singapore **61**: 269–317.
- Furtado C. X. 1939: *Araceae* malesicae II. Notes on some Indo-Malaysian *Homalomena* species. – Gard. Bull. Straits Settle. **10**: 183–238.
- Kartini S., Boyce P. C. & Wong S. Y. 2015: Studies on *Homalomenae* (*Araceae*) of Borneo XIX: Three new species of geologically obligated *Homalomena* from Sabah, Malaysian Borneo. – Willdenowia **45**: 419–427.
- Kurniawang A., Ni Putu Sri Asih, Adjie B. & Boyce P. C. 2011a: Studies on the *Araceae* of Sulawesi I: New taxa of *Schismatoglottis* and *Homalomena*, and a preliminary checklist and keys for Sulawesi. – Acta Phytotax. Geobot. **61**: 40–50.
- Kurniawang A., Ni Putu Sri Asih, Adjie B & Boyce P. C. 2011b: Studies on *Homalomenae* (*Araceae*) of Borneo IX: A new species of *Homalomena* Supergroup Chamaecladon from Kalimantan Timur, Indonesian Borneo. – Aroideana **34**: 30–36.
- Wong S. Y. & Boyce P. C. 2011: Studies on *Homalomenae* (*Araceae*) of Borneo X: Two new *Homalomena* species from Brunei, and a new Informal Species Complex for Supergroup *Cyrtocladon*. – Webbia **66**: 133–141.
- Wong S. Y. & Boyce P. C. 2012: Studies on *Homalomenae* (*Araceae*) of Sumatera I: *Homalomena hypsi-antha*, a distinctive new species of the Chamaecladon Supergroup. – Webbia **67**: 147–150.
- Wong S. Y., Tan P. J., Ng K. K., Ahmad S. O., Lee H. B., Fasihuddin B. A. & Boyce P. C. 2013: Phylogeny of Asian *Homalomena* (*Araceae*) based on the ITS region combined with morphological and chemical data. – Syst. Bot. **38**: 589–599.

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