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Studies on Monstereae (Araceae) of Peninsular Malaysia 1: *Rhaphidophora megasperma*, a New Record for West Malaysia

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Abstrak: *Rhaphidophora megasperma* Engl., spesies yang dianggap hanya endemik di Sarawak kini dilaporkan sebagai satu rekod baru untuk Semenanjung Malaysia. Ini merupakan spesies pertama dari kumpulan *Rhaphidophora* Spathacea yang direkodkan di Sunda Barat. Ilustrasi dan kekunci untuk spesies lamina-berlubang *Raphidophora* untuk Semenanjung Malaysia telah dipamerkan.

Kata kunci: Araceae, *Rhaphidophora,* Borneo, Sarawak

Abstract: *Rhaphidophora megasperma* Engl., a species hitherto regarded as endemic to Sarawak, East Malaysia, is published as a new record for Peninsular Malaysia. It is the first species in the *Rhaphidophora* Spathacea group recorded for western Sunda. The species is illustrated and a key to the perforate-laminated *Rhaphidophora* in Peninsular Malaysia is presented.

Keywords: Araceae, *Rhaphidophora,* Borneo, Sarawak

INTRODUCTION

Rhaphidophora for Peninsular Malaysia was revised in 1999, at which time 15 species were recognised (Boyce 1999), of which 2, *R. corneri* P.C.Boyce and *R. nicolsonii* P.C.Boyce were considered endemic. Subsequent revisions covered the remainder of Sunda, Wallacea, and Papuasia (Boyce 1999, 2000a, b, 2001a, b, 2005, 2006a, b). Since then fieldwork by the first author has revealed a number of Peninsular Malaysia *Rhaphidophora* that do not comfortably fit into any species covered by Boyce (1999). During a visit to Universiti Sains Malaysia (USM) in August 2009, the second author was shown one of the unplaced species and based on fieldwork experience in Sarawak, was able to assign it without doubt to *R. megasperma* Engl. This represents a new record for the species in Peninsular Malaysia, and further is the first record of the *Rhaphidophora* Spathacea group in west Sunda (see Boyce 2000a, 2001b for discussion of informal taxonomic units in *Rhaphidophora*).

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Key to pinnate and perforate-leaved *Rhaphidophora* in Peninsular Malaysia

1a. Leaf lamina abaxially pubescent, especially along the mid-rib and primary lateral veins

1b. Leaf lamina abaxially glabrous……..3

2a. Plants flowering on adherent stems; mature leaves with numerous perforations along both sides of the mid-rib……***R. foraminifera***

2b. Plants flowering on free stems; mature leaves with one to three perforations on one side of the mid-rib……***R. puberula***

3a. Rheophytes; leaves of flowering plants occasionally entire.....***R. beccarii***

3b. Medium to high-climbing lianes; leaves of flowering plants never entire……4

4a. Active shoot apices with sparse to copious netted fibre; feeding roots conspicuously ramentose-scaly; lamina of mature plants pinnatisect, the pinnae often perforated basally and appearing stilted. Juvenile plants with leaves overlapping in the manner of roof shingles (shingle climbers)……..***R. korthalsii***

4b. Active shoot apices glabrous; feeding roots smooth or slightly corky-lenticillate; lamina of mature plants variously split and perforated but never with the pinnae perforated basally and appearing stilted. Juvenile plants (not shingle climbers)……..5

5a. Leaf lamina at least partially pinnate……6

5b. Leaf lamina not pinnate, either entire or with a few, large ovate to rhomboid or trapezoid perforations, these sometimes extending almost to the margin……..7

6a. Leaf lamina up to 53 × 105 cm; sparsely to rarely ± entirely pinnatipartite, or pinnatisect; petiole 40–70 cm long, petiolar sheath extending ½–¾ along petiole; spadix up to 14 × 2 cm, stoutly cylindrical, inserted decurrently from 2 cm on peduncle; plants exclusively of montane forest……..***R. nicolsonii***

6b. Leaf lamina up to 42 × 38 cm but usually much smaller, sparsely to ± entirely deeply pinnatipartite to nearly pinnatisect, occasionally with large rhombic perforations adjacent to mid-rib; petiole 10–34cm long, petiolar sheath extending to base of apical pulvinus, inflorescences a few

together, spadix up to 3.5 × 1 cm, cylindrical, inserted slightly decurrently on peduncle; plants of lowland forest……**R. tetrasperma**

7a. Inflorescence two (sometimes more?) together, each subtended by a prominent, soon falling, cataphyll, and arising from an elongated reiterative floral sympodium at the tip of a plagiotropic free lateral shoot; spathe caducous; stigma impressed irregularly elliptic, longitudinally orientated…….....***R. corneri***

7b. Inflorescence three or more together, each subtended by a prominent persistent, later marcescent cataphyll, and arising from an much abbreviated reiterative floral sympodium arising laterally on a climbing shoots; spathe marcescent; stigma raised,punctiform……..
……*…***R. megasperma**

***Rhaphidophora megasperma* Engl.**

Rhaphidophora megasperma Engl., Bot. Jahrb. Syst. 25: 8 (1881); Engl. & K. Krause in Engl., Pflanzenr. 37 (IV.23B): 29, Fig. 9 (1908); Alderw., Bull. Jard. Bot. Buitenzorg III, 1 (1920) 383; Merrill, J. Straits Branch Roy. Asiat. Soc., special number: 89 (1921); Boyce, Garden's Bull. Singapore 53:57 (2001). — Type: Indonesia, Kalimantan, Central Kalimantan, Tumbang Hiang, 2 Sept. 1881, *Grabowski* 48 (B, holo!) Fig. 1.

Figure 1: *Rhaphidophora megasperma* Engl. A: plant in habitat; B: leaf lamina, abaxial view (note the glabrous surface); C: synflorescence with one post anthesis inflorescence (spathe turning black), one young infructescence, and one emerging inflorescence; D: inflorescence at male anthesis; E: infructescence approaching ripeness (note the ovaries are starting to elongate and expand, raising the stylar plate clear of the surrounding fruits).

Scindapsus havilandii Ridl., J. Straits Branch Roy. Asiat. Soc. 44: 184 (1905); Engl. & K. Krause in Engl., Pflanzenr. 37 (IV.23B): 75 (1908); Merrill, J. Straits Branch Roy. Asiat. Soc., special number: 91 (1921). — Type: Malaysia, Sarawak, Betong Division, Saribas, July 1892, *Haviland 2089* (K, holo!; SING, iso!).

Rhaphidophora jaculiformis Alderw., Bull. Jard. Bot. Buitenzorg III, 4: 197 (1922). — Type: Indonesia, Kalimantan, no further data, 1893, *Jaheri s.n*. (BO, holo!; BO, iso!).

Rhaphidophora subfalcata M. Hotta, Acta Phytotax. Geobot. 22: 6 (1966). — Type: Malaysia, Sarawak, Bintulu Division, along Sg. Kakus from Sg. Tinggili to Sg. Puteh, 13 Nov. 1963, *Hirano & Hotta* 1068 (KYO, holo!).

Moderate-sized, slender to slightly robust semi-leptocaul homeophyllous creeping and climbing liane to 5 m; seedling stage a stout eocaul with rather numerous leaves; pre-adult plants forming extensive terrestrial colonies; adult shoot architecture comprised of greatly elongated, clinging, physiognomically unbranched, sparsely leafy, non-flowering stems and much abbreviated, little-branched, free, densely leafy, flowering stems; stems smooth, terete in cross-section, internodes to 10 × 1.7 cm on clinging shoots, much shorter on free shoots, separated by slightly oblique leaf scars, older stems subwoody; flagellate foraging stems absent; clasping roots sparsely arising from the nodes and internodes of clinging stems, pubescent; feeding roots rare, clinging, pubescent; *leaves* spiro-distichous on clinging shoots, distichous on free shoots; cataphylls and prophylls membranous, soon drying chartaceous and persisting at the tips of flowering shoots, the falling; *petiole* grooved canaliculate, 11–29 × 0.2–0.4 cm, apical and basal pulvinus moderately prominent; petiolar sheath wide and membranous but very soon falling and thus usually not prominent, extending almost to or reaching apical pulvinus, very soon drying and degrading into very sparse, soon-falling fibres; lamina entire to slightly perforated, perforations round to rhombic, extending c. ¼–½ of lamina width on each side of the midrib, oblong-lanceolate or oblong-elliptic, oblique, 12.5–42 × 3–10.5 cm, rather bright medium green, semi-glossy adaxially, paler and similarly glossy abaxially, thinly coriaceous, base unequal, rounded, weakly acute to subrounded, apex acuminate; midrib prominently raised abaxially, ± sunken adaxially; *primary venation* pinnate, slightly raised abaxially and adaxially; interprimaries subparallel to primaries, much less prominent, slightly raised abaxially and adaxially, often markedly curving around the lamina perforations; secondary venation prominently reticulate, raised abaxially, less so adaxially; inflorescence two, three or more, together, carried on a much-abbreviated, long-persistent lateral branch, each inflorescence subtended by a prominent chartaceous persistent prophyll, and one or more chartaceous cataphylls; peduncle slender to somewhat stout, terete, 4–1 × 0.2–0.3 cm; spathe broadly canoe-shaped, stout-beaked, 4–6 × 2–3.5 cm, stiff-fleshy, gaping slightly at female anthesis and emitting a weakly fruity smell, medium to dull yellow on opening, at male anthesis opening wide, thence closing post anthesis, persistent, and later marcescent into early fruiting, eventually falling to leave a prominent scar; spadix stoutly to somewhat slender

cylindrical, sessile, inserted obliquely on peduncle, 2.5–4 × 0.5–0.7 cm, dull cream; stylar region mostly hexagonal, 1.1–1.2 × 1–1.1 mm; stigma punctiform, very prominent, 0.1–0.2 × c. 0.3 mm; anthers exserted at male anthesis; infructescence stoutly oblong-cylindrical, 3.5–5 × 1.2–1.5 cm, dark green becoming paler and later yellow green, eventually orange prior to the stylar plates sloughing; seeds ellipsoid, smooth, 1.5 × 1 mm, pale brown.

Distribution

PENINSULAR MALAYSIA

IPOH: near Tapah, riverside close to limestone hill, *Baharuddin 11022* Universiti Sains Malaysia.

BORNEO
Sarawak: scattered throughout the state, but formally recorded from: Kuching, Samarahan, Sri Aman, Betong, Kapit, Bintulu, and Limbang Divisions. Kalimantan: Barat, and Tengah. For a comprehensive listing of Bornean specimens see in Boyce (1999).

Habitat

Primary to disturbed secondary lowland perhumid to everwet forest on clay-loam, almost exclusively riverine (but not rheophytic), 40–130 m altitude.

Notes: Immediately distinguishable by the short leafy free side shoots bearing clusters of inflorescences subtended and interspersed by prominent chartaceous prophylls and cataphylls and by the spathe drying and persistent into early fruiting. The clustered inflorescences subtended by chartaceous cataphylls recall some New Guinea species, notably *R. versteegii*.

Rhaphidophora megasperma most obviously approaches *R. corneri* from which it differs by the more numerous inflorescences subtended by persistent cataphylls, the very short floral sympodium carried laterally on the branch, the marcescent spathe and the raised, punctiform stigma.

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