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KARTINI SAIBEH[1*], SIVA ROHGINI A/P BATUMALE[2] & PETER C. BOYCE[3]

Studies on *Monstereae* (*Araceae*) of Borneo II: Furtado's *Rhaphidophora kinabaluensis* elucidated and transferred to *Scindapsus*

Abstract

Kartini S., Siva Rohgini & Boyce P. C.: Studies on *Monstereae* (*Araceae*) of Borneo II: Furtado's *Rhaphidophora kinabaluensis* elucidated and transferred to *Scindapsus*. – Willdenowia 45: 409–413. 2015. – Version of record first published online on 12 October 2015 ahead of inclusion in December 2015 issue; ISSN 1868-6397; © 2015 BGBM Berlin.

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Rhaphidophora kinabaluensis Furtado (*Araceae*: *Monstereae*), described from Sabah, Malaysian Borneo, has been recollected and revealed to be a species of *Scindapsus* Schott belonging to a species complex surrounding *S. coriaceus* Engl. The taxonomic transfer is made – *S. kinabaluensis* (Furtado) Kartini & P. C. Boyce, comb. nov. – and a description, colour illustrations and list of specimens are provided. Defining characteristics and current taxonomy of the *Scindapsus* Coriaceus Complex are summarized.

Additional key words: aroids, *Scindapsus kinabaluensis*, *Scindapsus* Coriaceus Complex, Malaysian Borneo, Sabah

Introduction

Furtado was a productive author of taxonomic and nomenclatural papers best remembered for his work on palms. Over a period of almost 35 years, however, Furtado also published on *Araceae*, most notably dealing with general taxonomy of Malesian *Araceae*, particularly for Sabah, resulting from fieldwork with the Clemens for 6 weeks in March and April 1932 (Furtado 1935), and a partial monograph of the genus *Homalomena* Schott (Furtado 1939). In the 1930s a very considerable percentage of the aroid flora of what is now Malaysia remained undescribed, and Furtado was the lone active researcher. Given these circumstances it is unfortunate that his aroid work is not of the first rank, notoriously plagued with unsound taxonomic decisions and frequent nomenclatural quirks, many still unresolved. Here we deal with one of these long-standing issues: the correct identity of a characteristic and locally common low-climbing aroid occurring along open lower montane *kerangas* ridges and scrubby forest in the vicinity of Mount Kinabalu, and which Furtado described as a species of *Rhaphidophora* Hassk. – *R. kinabaluensis* Furtado (1935) – a name overlooked by Boyce (2001) when revising *Rhaphidophora* for Borneo.

Even perfunctory examination of the rather numerous type and paratype duplicates of Furtado's *Rhaphidophora kinabaluensis* is suggestive that the species is misplaced to genus, notably by the thick blade texture and obscure venation of the long-petioled leaves, which are quite unlike the states known in *Rhaphidophora*, but similar to those occurring in two informal species complexes of *Scindapsus* Schott: the scandent to low-climbing Coriaceus Complex, and the perching litter-trapping epiphytic/lithophytic Beccarii Complex.

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Rhaphidophora and *Scindapsus* are critically separated on ovule (and seed) and placentation characteristics, with *Rhaphidophora* having one or two intrusive parietal placentas carrying numerous ovules (fruits with many small ellipsoid seeds), and *Scindapsus* with a solitary ovule on a basal placenta (fruits with a large, solitary seed).

Dissection of the very tough inflorescences typical of *Monstereae* to examine the critical ovules and placentation is problematic and usually results in considerable damage – impracticable for type material. Fortunately, populations of what is very clearly the same species as Furtado's concept are readily accessible at Mount Kinabalu and surrounding areas and these were studied by the second author by proxy of damaging the historical types.

Examination of inflorescences at pistillate and staminate anthesis revealed every pistil to possess a solitary ovule on a basal placenta, assigning Furtado's species to *Scindapsus*. The necessary taxonomic transfer is made here.

Results and Discussion

Scindapsus kinabaluensis (Furtado) Kartini & P. C. Boyce, **comb. nov.** ≡ *Rhaphidophora kinabaluensis* Furtado in Gard. Bull. Straits Settlem. 8: 152. 1935. – Holotype: Malaysian Borneo, Sabah, Kinabalu, Tenompok, 26 Mar 1932, *C. X. Furtado comm. J. Clemens & M. S. Clemens sub. no. 26875* (SING!; isotypes: BM!, K!). – Fig. 1 & 2.

Description — Medium-sized homeophyllous low climber or semi-terrestrial scandent shrub; *stems* smooth, terete or nearly so, internodes 2.5–5 × c. 1 cm, medium semi-glossy green with older portions becoming brown and slightly corky, later cracking and fissuring; *roots* sparse, stem bases with ramifying hypogeal roots, distal nodes of stems each producing a solitary thick fleshy feeding root, these often supporting scandent growth through adjacent low scrub; *leaves* rather dispersed along stems, becoming clustered (5–15 leaves together) at shoot tips prior to a flowering event; *petiole* (10–)21–23 cm long, shorter than or equalling blade, smooth, dark green, geniculate apically and basally, geniculi initially greenish brown, later becoming pale brown and corky; *sheath* broad, well developed, mostly extending to c. ¼ way along petiole, to c. ½ on leaf subtending an inflorescence; c. 6 mm wide, marcescent, persisting as tattered fibres and patches of parchment-like tissue; *blade* entire, narrowly elliptic, thickly and stiffly coriaceous, 21–27.5 × 6.5–10 cm, apex acuminate, base cuneate, adaxially semi-glossy dark green, smooth, abaxially somewhat pale yellowish green, slightly asperous; *midrib* thick, somewhat oblique, bluntly raised adaxially, somewhat sharply raised abaxially; *primary lateral veins* c. 15 per side, pinnate, very weakly differentiated and approximately equal number of interprimary veins; all other venation obscure. *Inflorescence* solitary, smelling of yeast at anthesis, leaf immediately subtending usually with blade somewhat reduced and petiolar sheath proportionately longer than typical; *peduncle* shorter than petiole, 2–3 cm long, slightly shorter than spadix, pale milky yellow, smooth; *spathe* 4–5.5 cm long, ellipsoid with terminal portion stoutly rostrate, smooth, fleshy, hardly opening during anthesis and entirely deciduous soon after anthesis, both surfaces milky yellow; *spadix* cylindric, stout, shorter than spathe, c. 2.5 cm long, milky yellow; *flowers* bisexual; *pistil* hexagonal-columnar, 4–5 × c. 3 mm; *stylar region* hexagonal; *stigma* sessile, punctiform to somewhat elliptic, pale yellow at pistillate anthesis and then with a conspicuous droplet, drying and becoming sunken and dark post pistillate anthesis; *ovary* unilocular; *ovule* solitary, campylotropous; *placentation* basal; *anther* elliptic; *pollen* fully zonate, hamburger-shaped, medium-sized, psilate, c. 25 µm in diam.; *infructescence* a "monsterocarp" ripening dull greenish brown, stylar plates sloughing at maturity to reveal pale cream pulp fragrant of fermenting pineapple; *fruit* single-seeded; *seeds* large, c. 3 mm in diam., kidney-shaped; *testa* bony, pale yellow.

Distribution — Malaysian Borneo, Sabah: N and S Crocker Ranges, notably around Mount Kinabalu, extending to the Sir James Brooke Range to the N of Kinabalu N.P.

Ecology — Low climber or scandent semi-terrestrial shrub in scrubby ridgetop *kerangas* or open *kerangas* forest on slopes between 1400–2500 m. Flowering mainly observed in plants fully exposed to sun.

Discussion — *Scindapsus kinabaluensis* belongs to the informal *Scindapsus* Coriaceus Complex (sensu Kartini 2001) defined by thickly coriaceous leaf blades with all venation rather obscure, or at most the primary lateral veins visible, smooth stems, a semi-terrestrial to scandent shrubby habit, at most low-climbing, a marked preference for exposed situations in *kerangas*, and solitary inflorescences with a thick to very thick leathery tough spathe. The complex is pre-eminently Bornean, with only *S. scortechinii* Hook. f. (Peninsular Malaysia and S Thailand) occurring outside Borneo. Currently there are seven described species: *S. borneensis* Engl. & K. Krause, *S. coriaceus* Engl., *S. kinabaluensis*, *S. longipes* Engl., *S. rupestris* Ridl., *S. scortechinii* and *S. sumatranus* P. C. Boyce & A. Hay. Field work by the first author (in Sabah) and the third author (in Sarawak and Kalimantan) indicates that species of the Coriaceous Complex are manifestly under-described. This is not particularly surprising since most of the species are highly similar in appearance, and climbing aroids in general are usually ignored by scientific collectors as being "too difficult" to sample, or are sampled inadequately. Furthermore, despite being of easy cultivation, climbing Asian aroids are not popular with horticulturists as they lack the showy appeal of plants such as *Alocasia* (Schott) G. Don.

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Fig. 1. *Scindapsus kinabaluensis* – A & B: flowering (A) and early fruiting (B) climbing plants in habitat; C: terrestrial plant flowering in habitat; D: leaf blade, adaxial view; E: detail of ageing portion of stem; note the corky, cracking epidermis. – A & B from *Kartini BORH 2213*; C–E from *Wong Sin Yeng & P. C. Boyce AR-4738*. – Photographs: A & B by Kartini Saibeh; C–E by Peter C. Boyce.

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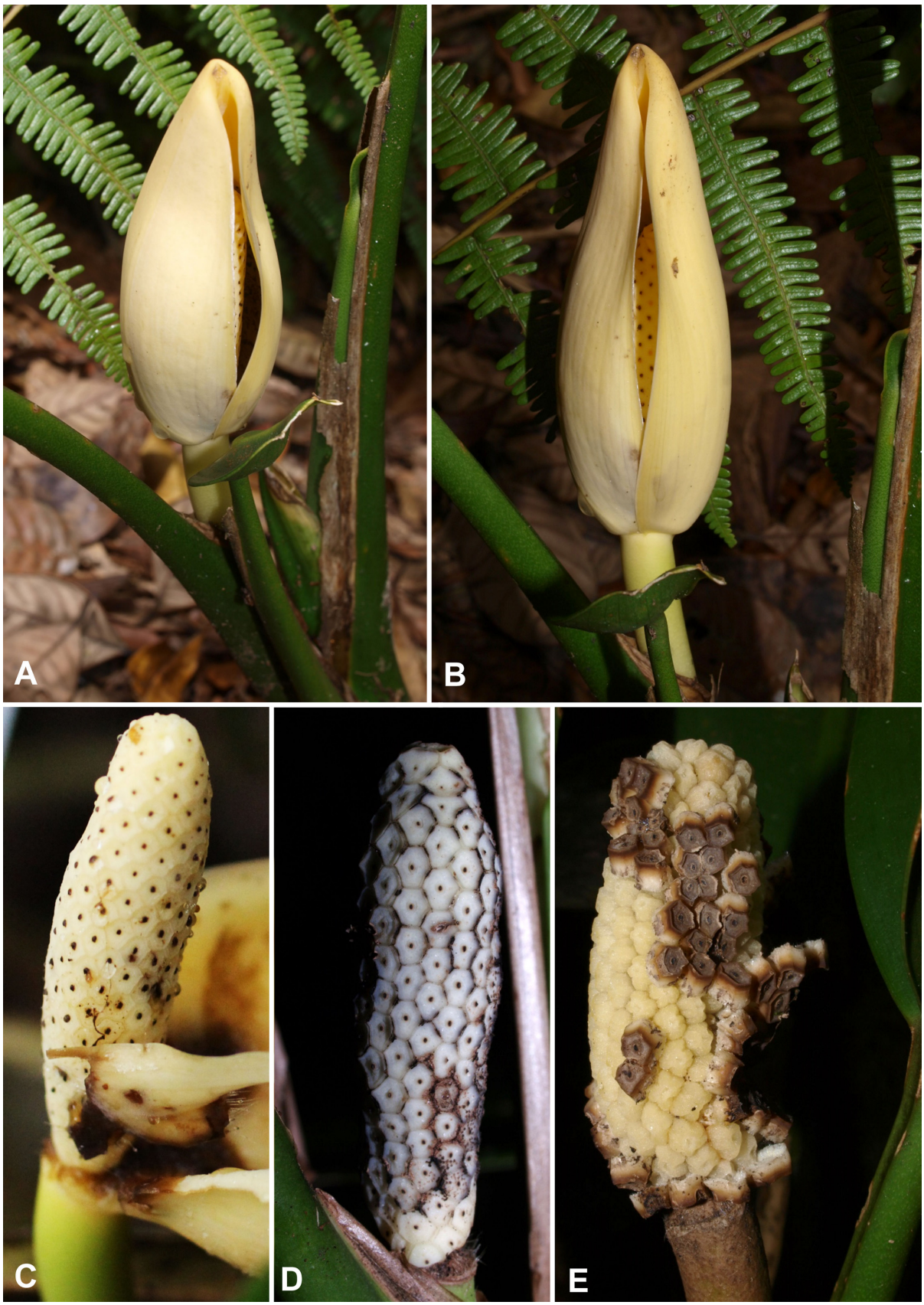


Fig. 2. *Scindapsus kinabaluensis* – A & B: inflorescence at late pistillate anthesis; C: inflorescence post anthesis, spathe naturally deciduous; D: young infructescence; E: ripe infructescence with stylar plates sloughing away to reveal pulp cavities. – A, B, D & E from *Wong Sin Yeng & P. C. Boyce AR-4738*; C from *Kartini BORH 2213*. – Photographs: A, B, D & E by Peter C. Boyce; C by Kartini Saibeh.

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Many of the inflorescences examined at pistillate anthesis contained *Chaloenus nitidicupreatus* Takizawa (Coleoptera: Chrysomelidae: Alticinae) (Takizawa 2012) and an unidentified species of *Peltonotus* Burmeister (Coleoptera: Scarabaeidae: Dynastinae: Cyclocephalini).

The *Scindapsus* Coriaceus Complex is an ecologically interesting assemblage adapted to almost xerophytic conditions for at least part of the year and even in wet weather subjected to intense sunlight for part or most of every day. In these factors they are decidedly unconventional as compared with most people's concept of aroids from the humid tropics. The closest ecological match in the aroids would appear to be the mostly Brazilian and largely lithophytic species of *Anthurium* sect. *Urospadix* Engl. There, too, species are vegetatively highly similar to the extent that many have been overlooked for want of previous critical studies. Many of the morphological similarities between the *Scindapsus* Coriaceus Complex and *Anthurium* sect. *Urospadix*, notably stiffly coriaceous leaf blades and tough inflorescences, are likely adaptive to the seasonal habitat they favour (Haigh & al. 2011).

Additional specimens seen — Malaysian Borneo: Sabah: Penibukan, base of wall N of Pinokkok falls, 1931–1932, *J. Clemens & M. S. Clemens s.n.* (BM!); Dallas, 17 Aug 1931, *J. Clemens & M. S. Clemens 26121* (BM!, K!); Dallas, 1 Sep 1931, *J. Clemens & M. S. Clemens 26243* (BM!, K!); Dallas, 27 Dec 1932, *J. Clemens & M. S. Clemens 28142* (BM!, K!); Penibukan, 16 Jan 1933, *J. Clemens & M. S. Clemens 31094* (BM!, K!); Gurulau spur, 22 Nov 1933, *J. Clemens & M. S. Clemens 51128* (BM!, K!); Kamborangah, 29 Mar 1932, *C. X. Furtado comm. J. Clemens & M. S. Clemens sub. no. 26731* (BM!, K!); Gurulau spur, above Kiau, Feb 1910, *L. S. Gibbs 4010* (BM!); Penampang, Gunung Alab, 3 Feb 2012, *Johnny Gisil & Nor Hazami BORH 2208* (BORH!); Gunung Alab, 13 Oct 2013, *Kartini S. BORH 2213* (BORH!); Pantai Barat, Kota Belud, Kinabalu N.P., Kiau View Trail, 06°01'04.1"N, 116°32'11.8"E, 12 May 2014, *Wong Sin Yeng & P. C. Boyce AR-4738* (images only).

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