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RESEARCH ARTICLE

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Hoya wongii (*Apocynaceae*, *Asclepiadoideae*): a new campanulate flowered species from Brunei (Borneo)

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Key words

Apocynaceae
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Borneo
Brunei
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corona
Hoya wongii

Abstract A new species from kerangas heath forest of Brunei, Borneo, *Hoya wongii*, is here described and illustrated. This species differs from the previously described species of *Hoya* in having a corona with inflated outer processes and laterally compressed and erect inner processes, ending in two bidentate membranaceous appendages. The corona is inserted above a pale yellow campanulate corolla. We discuss morphological affinities between the new species and other campanulate flowered species of *Hoya*.

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INTRODUCTION

Hoya R.Br is a genus of tropical and subtropical plants, generally epiphytic, lactiferous climbers with fleshy, sometimes succulent leaves. *Hoya* has a wide Indomalesian-Australian-Western Pacific distribution with the highest species diversity in the Philippines and New Guinea (Tsiang & Li 1977, Li et al. 1995, Forster & Liddle 1996, Forster 1996, Wanntorp et al. 2006a, b).

Presently, no comprehensive taxonomic revision is available for the genus (Meve 2002). Due to the lack of taxonomic studies on the whole genus, the number of species in *Hoya* is difficult to estimate. There are more than 500 species names listed in the International Plant Names Index (September 2010). This list, however, includes many synonyms and a number of c. 300 species for *Hoya* is probably more close to reality (Forster & Liddle 1996). In the past ten years, more than ten *Hoya* species have been described from Borneo. Among these, only one species, the newly described *H. danumensis* Rodda & Nyhuus (2009) has a strictly campanulate corolla. In Borneo two species with semi-campanulate corollas have been recorded, *H. phyllura* O.Schwartz and *H. nyhuusiae* Kloppenb. (Kloppenburg 2003); *H. vacciniiflora* O.Schwartz has a campanulate-urceolate corolla. Species with campanulate or semi-campanulate corollas are also found in other areas of the genus distribution (Rodda & Nyhuus 2009).

We studied herbarium specimens of *Hoya* at A, B, BM, BRUN, E, FI, HBG, K, L, P, SAN, SING, SNP and TO to provide evidence for a new campanulate flowered species from Brunei, which we describe below.

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DESCRIPTION

Hoya wongii Rodda, Simonsson & L.Wanntorp, *sp. nov.* — Fig. 1, 2

Ad *Hoyam campanulatam* Blume similis ob corollam campanulatam, sed differt coronae lobis inferius inflatis et superne erectis, compressis cum binis appendicibus membranaceis bidentatis. — Typus: *K.M. Wong (KMW) 1566* (holo BRUN; iso K, L, SAN, SING), Borneo, Brunei, Tutong district, Pasir Puteh, 5 Oct. 1989.

Etymology. *Hoya wongii* is named after its first collector Dr. Wong Khoon Meng, who has greatly contributed to the knowledge of the SE Asian flora.

All measurements from rehydrated material.
Semi-woody, slender glabrous vine with white latex. *Leafy stems* cylindrical 2.5–3 mm diam, older stems leafless, bark waxy, peeling at least on dry material. *Internodes* 15–150 mm, adventitious roots absent. *Leaves* opposite, petiolate; petiole 3–7 by 0.7–1.2 mm; lamina coriaceous, flexible, not succulent, elliptic, 50–90 by 20–40 mm, widest in the central portion, apex apiculate-cuspidate, base shortly attenuate, margin entire, penninerved, main vein depressed on adaxial surface, evident on abaxial surface, secondary veins 5–7 pairs evident when dry, anastomosing near leaf margins. *Inflorescences* pseudo-umbelliform, 1-flowered; peduncle extra-axillary, perennial, about 10 mm long, pedicels 15–25 by 0.4–1 mm, glabrous. *Calyx* c. 5 mm diam, sepals oblong, about 2 by 1.6 mm, apex rounded, margins ciliate. *Corolla* campanulate, pale yellow, 25–30 mm diam; corolla lobe fused for c. 18 by 16 mm, free lobes c. 5 mm long with acute tips. *Corona* staminal pale yellow, 5–6 mm high, 6 mm diam, outer processes broadened into a rounded free process with revolute lateral margins, inner processes laterally compressed, ending in two bidentate membranaceous appendages, about 2 mm higher than outer processes and 0.3 mm higher than inner processes; anther skirt revolute, free from the filament tube. *Guide rail* forming a ridge, laterally compressed, prominent at the base of the anther skirt and extending 0.3–0.5 mm laterally. *Pollinarium* c. 1 mm long, pollinia oblanceolate, 830 by 300 µm, apex rounded to obtuse, retinaculum 280 by 180 µm, caudicles 120 µm long. *Ovary* rounded, 2.5 mm long. *Fruits* and *seeds* not seen.

Distribution — Brunei, possibly other areas of Borneo.

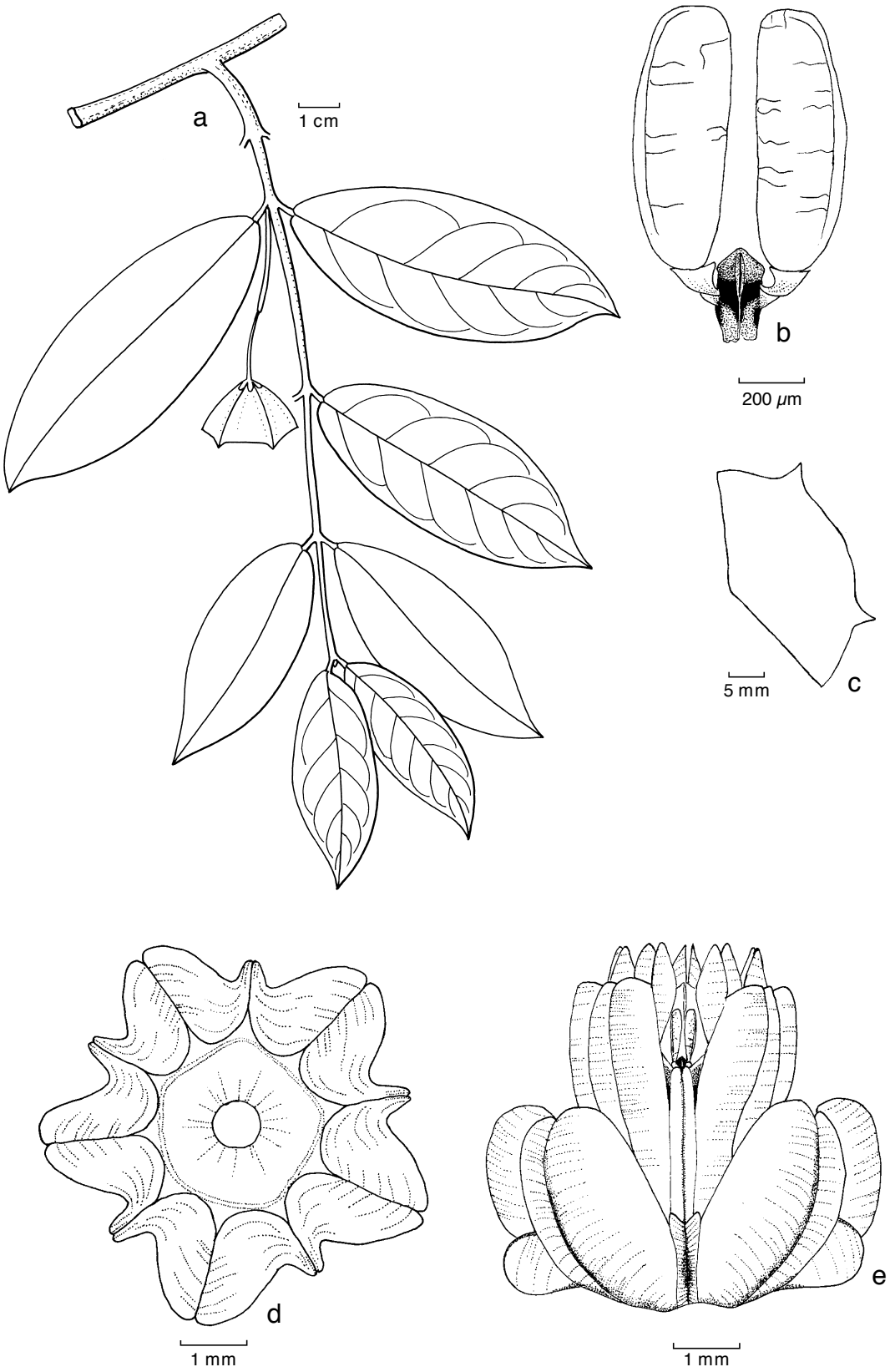

Fig. 1 *Hoya wongii* Rodda, Simonsson & L.Wanntorp. a. Flowering branch; b. pollinarium; c. corolla lobes; d. corona, underside; e. corona, side view (M. Rodda delineavit) (prepared from the holotype). — Scale bars: a = 1 cm; b = 200 μm; c = 5 mm; d, e = 1 mm.

Habitat & Ecology — A climbing epiphyte only found in the type locality. The type locality is in a coastal kerangas heath forest with white sand, 15–30 m above sea level.

Additional specimens seen. ***Hoya campanulata*** Blume *sin. coll.*, *L0004389* (type L), Java, Ex Hort Bogor. ***Hoya collettii*** (Collett & Hemsl.) Schltr., *Collett 833* (type K), Myanmar, Shan Hills, 6000 ft, June 1888. ***Hoya manipurensis*** Deb, *Micholitz s.n.* (holotype of *Micholitzia obcordata* N.E.Br., K), 'India & Burma', cult. Royal Bot. Gard. Glasnevin, Dublin, 1909. ***Hoya danumensis*** Rodda & Nyhuus, *M. Rodda 2008.1h* (holotype FI) ex hort., 3 Sept. 2008. ***Hoya phyllura*** O.Schwartz, *Winkler 339* (type HBG), Lebang Hara, West Borneo, 24 Nov. 1924. ***Hoya telosmoides*** Omlor, *Clemens 29828* (holotype BM), Malaysia, Sabah, Mt Kinabalu, Tenompok, 1500 m, 7 June 1932. ***Hoya vacciniiflora*** O.Schwartz, *Winkler 518* (type HBG), Bukit Mulu, West Borneo, 2 Dec. 1924.

Conservation status — *Hoya wongii* should be considered Data Deficient (DD) according to IUCN Red List criteria (IUCN

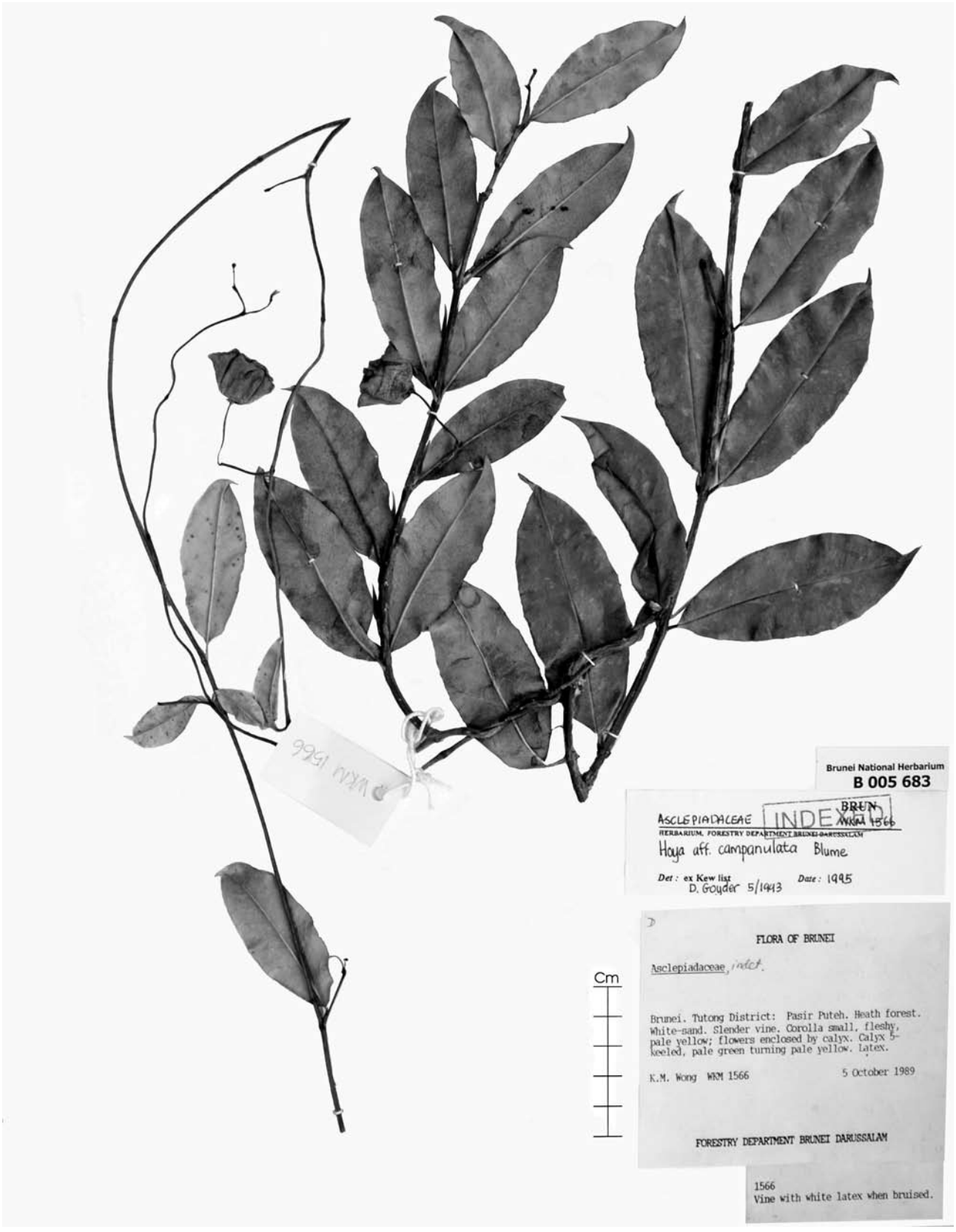

Fig 2 *Hoya wongii* Rodda, Simonsson & L.Wanntorp. The peculiar single-flowered inflorescences are evident on this specimen (holotype in BRUN herbarium). Photo by Dr. Jacqueline Henrot, BRUN.

2001) because it is known from only one collection and thus remains in need of further investigation with respect to future conservation efforts. This species was found in kerangas heath forest, a nutrient poor habitat rarely used for cultivation. However, felling and burning activities may degrade kerangas into an open savanna of shrubs (Whitmore 1984) making it inhospitable for many epiphytic plant species including *Hoya.*

Notes — Due to its broadly campanulate corolla, specimens of *H. wongii* can be easily confused with specimens of *H. campanulata*, *H. danumensis*, *H. nyhuusiae*, *H. phyllura* or *H. vacciniiflora*. However, none of these species have coronas showing the same morphological characters as in *H. wongii*. Here, the corona has broadly inflated outer processes and laterally compressed inner processes with two bidentate membranaceous appendages. All other Bornean species of *Hoya*

with a campanulate or semi-campanulate corolla have spreading elongated corona lobes and a well-developed anther skirt forming a disk at the base of the corona. Among species with a campanulate to semi-campanulate corolla, *H. collettii*, resembles *H. wongii* in the morphology of the corona. This species, which is endemic to Myanmar, is so far only known from the type specimen. It differs from *H. wongii* in being a small shrub with very thick, narrowly lanceolate leaves and not a vine with thin, elliptic leaves. Further, *H. collettii* has rounded outer corona processes much less developed than those of *H. wongii*. The outer corona processes are very elongated but not laterally compressed and lack the two bidentate appendages of *H. wongii*.

Two additional species of *Hoya*, one again endemic to Borneo and the other found in India, Thailand and China, show a slightly similar corona to that of the new species. The first, *H. telosmoides* (Omlor 1996), from Borneo, has only been collected from Mt Kinabalu, to which it is possibly restricted. The corolla in *H. telosmoides* is not campanulate as that of *H. wongii* but urceolate and hairy on the inside. These two species have similar coronas, with well-developed erect outer processes. The inner coronal processes of *H. telosmoides* are, however, much less developed than those of *H. wongii* and lack the bidentate appendages. The second species, *H. manipurensis* (Deb 1955), is a species growing at low to middle altitudes in cool sub-tropical zones of India, China and Thailand. It also has an urceolate corona similar to that of *H. telosmoides*. In addition, *H. manipurensis* also differs in habit, being an epiphytic shrub and not a vine, and in having c. 10 mm long greenish red tubular flowers instead of pale yellow campanulate flowers.

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