

Hoya bukitrayaensis (Apocynaceae), a new species from Kalimantan, Indonesia

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Abstract

A new species, *Hoya bukitrayaensis* R.P.P.Ahmad, Yudistira & Mustaqim, is described based on material collected from Mount Bukit Raya, Central Kalimantan, Indonesia. The species is characterized by a pubescent corolla and a floral morphology that closely resembles that of *H. kastbergii* Kloppenb. However, the new species differs from *H. kastbergii* in its lanceolate leaf blade with a pointed tip (vs ovate with a rounded tip), shallowly lobed corolla (vs deeply lobed), and 3-lobed (vs entire) outer coronal lobes. A detailed morphological comparison with these related species is provided to highlight diagnostic features and support its recognition as a distinct taxon, and photographs of live plants are provided.

Keywords: climbers, montane plants, taxonomy

Introduction

Hoya R.Br. is primarily distributed in the Indomalayan-Australasian biogeographic region, but with a few species also occurring in southern India, Sri Lanka, the Himalayan foothills, Southern China, and Japan (Forster *et al.* 1998). In recent years, reports on *Hoya* in Indonesia have continued to increase (Lamb & Rodda 2016; Rodda 2017; Ahmad *et al.* 2021; Rahayu *et al.* 2022; Rodda & Rahayu 2022). This indicates that the diversity of *Hoya* in Indonesia still requires further exploration, particularly in unexplored regions. Based on available data, centres of *Hoya* diversity are located in Borneo, New Guinea, and the Philippines (Pelser *et al.* 2011; Lamb & Rodda 2016; Cámara-Leret *et al.* 2020).

One region with remarkable diversity of *Hoya* is Borneo, an island with 86 known species (Rodda & Rahayu 2022, 2025). Despite being one of the centres of distribution, according to Lamb & Rodda (2016), there are still several areas in Borneo in need of further exploration. *Hoya biruensis* Rodda & S.Rahayu, a species known from a single locality in Kalimantan Barat, is the latest addition for the island (Rodda & Rahayu 2025). This species is also the second species in Borneo that produces night-blooming flowers (Lamb *et al.* 2014; Rodda & Rahayu 2025).

A specimen of mountainous *Hoya* was collected from the upper elevations of Mount Bukit Raya, the highest summit of Indonesian Borneo. The specimen was assessed against published literature and comparison to other herbarium specimens. It was

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concluded that the recently collected plant does not match any previously known species. It is described and illustrated here as a species new to endemic to the montane forest of Mount Bukit Raya, Indonesian Borneo.

Materials and methods

Material used in this study was collected from Bukit Baka Bukit Raya National Park in the West Kalimantan Province during the botanical exploration at Expedition Biodiversity TaNa KaYa 2024. The specimen was found in flower and herbarium specimen was made using the standardized guidelines from Davies *et al.* (2023) and supplemented by flowers preserved in ethanol 70%. Morphological description was prepared from fresh materials except for the pollinia and micromorphological characters like hairs. To verify its status as a new species, specimen and morphological description were compared to relevant literature (Seeman 1851; Schlechter 1913; Schumann & Lauterbach 1905; Lamb & Rodda 2016), comparison to herbarium specimens (in BO) including JSTOR Global Plants as well as GBIF (2025), and photographs in Costea *et al.* (2025).

Taxonomy

Hoya bukitrayaensis R.P.P.Ahmad, Yudistira & Mustaqim, *sp. nov.*

Type: Indonesia: West Kalimantan Province, Serawai, Rantau Malam, Linang camp (0°38'45.3"S, 112°39'22.5"E), 1400 m asl, 3 July 2024, Yudistira *et al.* YRY-054-BR (holotype: WAN!).

Diagnosis: *Hoya bukitrayaensis* R.P.P.Ahmad, Yudistira & Mustaqim is most similar to *Hoya kastbergii* Kloppenb., as both are epiphytic climbers, have inflorescence stalks with reddish spots, have a finely pubescent corolla surfaces, and red corona lobes. However, the new species differs from *H. kastbergii* by its lanceolate leaf blade with an acuminate apex (vs ovate with rounded apex), inflorescence with up to 6 flowers (vs up to 15), the shallowly-lobed corolla (vs deeply partite), and the winged 3-lobed (vs wings absent and entire) outer corona lobes. (Table 1).

Table 1. Morphological comparison *Hoya bukitrayaensis*, *H. kastbergii*, and *H. ischnopus*.

Character	<i>H. bukitrayaensis</i>	<i>H. kastbergii</i>	<i>H. ischnopus</i>
Habit	epiphytic climber	epiphytic climber	epiphytic climber or subshrub
Stem indumentum	pubescent to glabrescent	puberulent	glabrous
Leaves			
Lamina shape	elliptic to lanceolate	broadly ovate to nearly circular	linear-lanceolate
Lamina size (cm)	6.5–9 × 2–2.7	4–8 × 3–5	12–17.6 × 3.7–6
Apex	acuminate	rounded	acuminate
Base	rounded to acute	rounded	obtuse
Adaxial hairs	pubescent	glabrous	glabrous
Abaxial texture	rough	smooth	smooth
Inflorescence			
Type	umbelliform, convex	umbelliform, flat	umbelliform, flat
Number of flowers	4–6	up to 15	10–22
Flowers			
Diameter (cm)	0.8–1.0	c. 1.5	1.7–1.9
Corolla colour	fulvous to russet with purple dots	cream	white to pale cream
Corolla indumentum	adaxially long hairy	adaxially finely pubescent	adaxially finely pubescent
Corolla lobes	shallowly lobed	deeply partite	slightly lobed
Corona colour	dark red	bright ruby red	pale, either yellow, green, or red
Corona outer process	winged, distinctly 3-lobed	wingless, entire	wingless, entire
Pollinia length (mm)	0.7–1.0	c. 0.44	0.8–1.2
Source		Kloppenb (2003)	Ahmad <i>et al.</i> (2021)

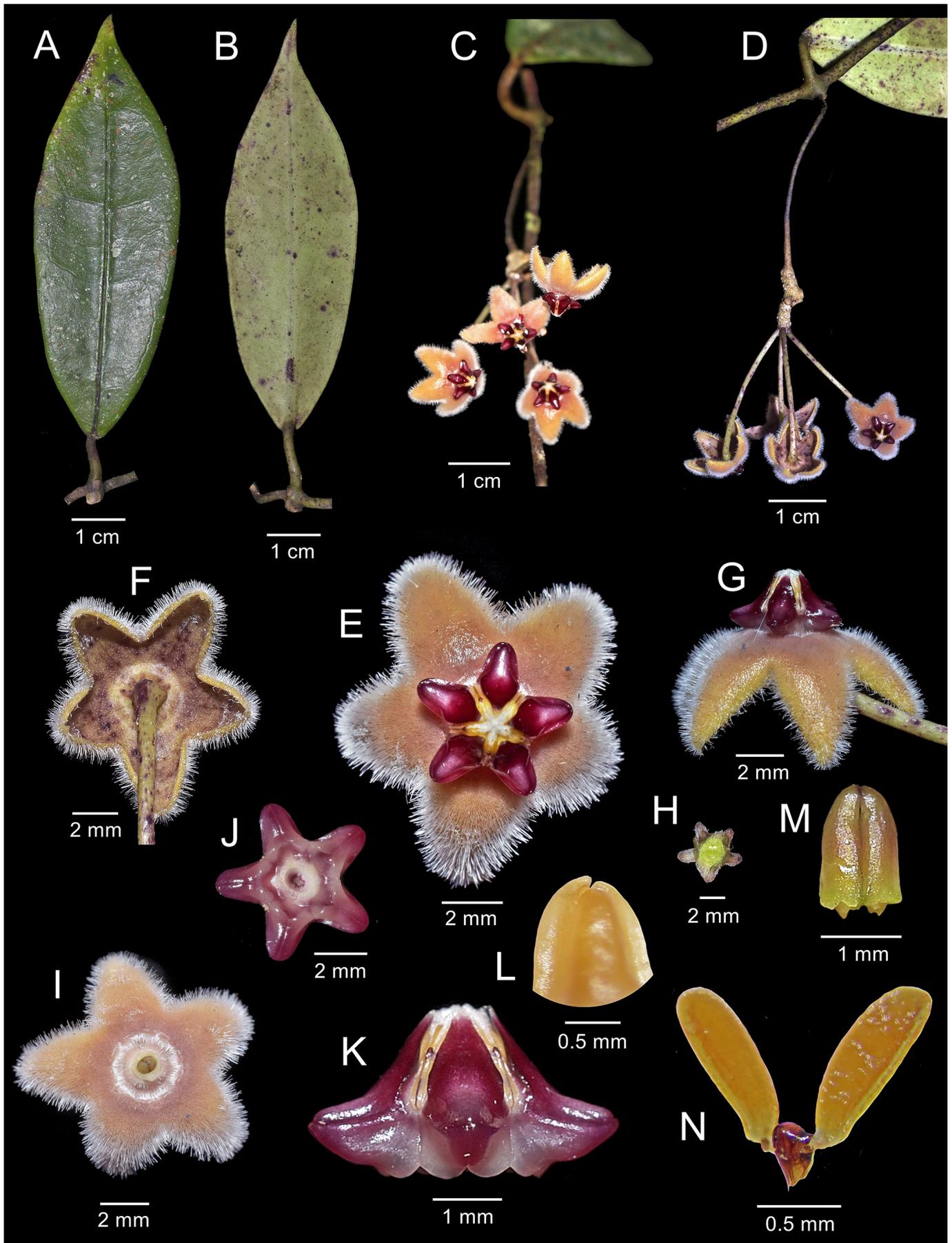


Figure 1. Morphology of *Hoya bukitrayaense*. A. Leaf adaxial. B. Leaf adaxial. C. Inflorescence, from underneath. D. Inflorescence, side view. E. Flower adaxial, F. Flower abaxial. G. Flower, side view. H. Calyx. I. Corolla lobe. J. Corona lobe from underneath. K. Corona lobe, side view. L. Outer corona lobe. M. Ovary. N. Pollinarium. All images from the type specimen. (Photos: A–K, M by Y.R. Yudistira and W.A. Mustaqim; L & N by Roland P.P. Ahmad).

Epiphytic climber with white latex in all vegetative parts. *Stems* slender, cylindrical, up to 3 mm diam., pubescent to glabrescent. *Roots* adventitious, produced along the stems. *Leaves*: coriaceous, succulent, elliptic to lanceolate, 6.5–9 × 2–2.7 cm, apex acuminate, base rounded to acute, margin rough and slightly undulate, rough at abaxial surface, adaxial surface pubescent, dark green and brown purplish when young leaves; veins brochidodromous, with 1 prominent basal secondary vein on each side of the midrib and 3–4 further shorter secondary veins on each side of main vein. *Inflorescence* umbelliform, convex, 4–6-flowered; *peduncle* axillary, positively geotropic, terete, 4–5 cm long, c. 0.1–0.2 cm diam, glabrous. *Flowers* remaining open for about a week; *pedicel* cylindrical, curved, 2–3 cm long, yellowish with purple dots, glabrous. *Calyx* lobes deltoid, 0.2–0.3 × 0.1–0.2 cm, acute at apex, yellowish pilose; basal colleters ovate. *Corolla* rotates, 0.8–1.0 cm in diam. at a flattened state, light fulvous to russet, adaxially long hairy, abaxial glabrous with purple dots; tube/connate part c. 0.4–0.6 mm long, adaxial hairy; lobes reflexed, broadly triangular, 0.5–0.8 × 0.3–0.4 cm, apex acute, with margin revolute. *Gynostegium* sessile. *Corona* staminal, spreading, 0.3–0.5 cm high, 0.4–0.6 cm in diam., fleshy; corona lobes ovate, convex above, 2.5–3 × 1–2 mm, with revolute margins, dark red, inner process upcurved, apex acute, outer process winged, apex 3-lobed. *Pollinia* oblong, 0.7–1.0 mm long, 0.3–0.6 mm wide, round at base, round at apex, with evident pellucid margin; *caudicles* short with cylindrical shape, attached $\frac{3}{4}$ towards of the corpusculum; *corpusculum* oblanceolate, 0.3–0.5 × 0.2–0.3 mm. *Ovary* ovoid, glabrous. *Fruit* and *seed* unknown. (Figure 1)

Etymology: The specific epithet refers to the collection locality of the type material, Bukit Raya in West Kalimantan, Indonesia.

Distribution: Endemic to Indonesian Borneo: known only from Mount Bukit Raya.

Habitat and Ecology: This species grows in the montane tropical rain forest on mountain ridge, from an elevation of 1400 m asl.

Phenology: Flowering in the wild in July; fruiting unknown.

Notes: *Hoya bukitrayaensis* is a newly described species that is morphologically similar to *H. kastbergii* Kloppenb. and *H. ischnopus* Schltr (Table 1). *Hoya kastbergii* occurs in Sulawesi and Borneo, with Bornean records only coming from Sarawak. While *H. bukitrayaensis* is a montane plant, *H. kastbergii* is a lowland plant known from an elevation around 300 m (Kloppenb. 2003, Lamb & Rodda 2016). The second most similar species, *Hoya ischnopus*, is so far known to occur in Sulawesi from 10 to 500 m (Ahmad et al. 2021) and New Guinea (Papua New Guinea) at c. 1400 m (Schlechter 1913).

Hoya bukitrayaensis grows in tropical cloud forest at around 1400 m asl, representing a relatively high-elevation occurrence for the genus in Indonesian Borneo. Such montane habitats often harbour narrowly distributed species and contribute to the high levels of plant endemism reported in regions such as Borneo, Sulawesi and New Guinea (Lamb & Rodda 2016; Cámara-Leret et al. 2020).

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