New Species from Vietnam – *Hoya lockii* (Apocynaceae, Asclepiadoideae)

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ABSTRACT: The new species *Hoya lockii* (Apocynaceae, Asclepiadoideae) was discovered in the Thua Thien-Hue Province of central Vietnam and is here described and illustrated. The morphological characters of *H. lockii* and its closely related species *H. multiflora* Blume are compared. *Hoya lockii* differs from *H. multiflora* in being pubescent in all parts of the plant except for the leaf blade and the corona, as well as in having white-opalescent corolla lobes and mucronate apex of corona lobes.

KEY WORDS: Apocynaceae, flora of Vietnam, *Hoya lockii*, IUCN Red List, new species, plant diversity, taxonomy.

INTRODUCTION

Hoya R. Br. (Apocynaceae, Asclepiadoideae) is a genus of at least 100 species distributed throughout Southeast Asia and Melanesia (Li et al., 1995). The genus exhibits highest diversity in Malaysia, the Philippines, New Guinea, the western Pacific Islands, and mainland Asia, including the Indian subcontinent (Forster and Liddle, 1996). Until now 18 species of *Hoya* have been recovered in Vietnam (Tran The Bach, 2005).

During a recent field trip in central Vietnam, some unusual specimens of *Hoya* were discovered. No similar herbarium specimens were found in largest recent *Hoya* collections stored in Vietnamese Herbaria (HN, HNU, VNM), as well as among duplicates, which were delivered to Herbaria of Komarov Botanical Institute (LE) and Missouri Botanical Garden (MO). Collected plants also did not fit with any described species of the genus and differed from all species previously reported from Vietnam (Ho, 1993; Tran, 2005) and from the Indochina region (Costantin, 1912) and China (Li et al., 1995). Based on morphological characters, we here describe this taxon as a new species.

TAXONOMIC TREATMENT

Hoya lockii The P.V. et Aver., *sp. nov.*

Figs. 1, 2, 3A & B

Described from central Vietnam ("Vietnam: Thua Thien - Hue province, A Luoi district, Huong Nguyen municipality, around point 16°06'04"N 107°27'55"E, on tree in pristine primary evergreen broad-leaved and mixed forest, 1,000 m a.s.l."). Type ("12 May 2011, *Averyanov L., P.V.The, N.T.Vinh, CPC 3092"*) – CPC Herbarium (holotype), LE, VNM (isotypes).

Suffruticulus epiphyticus caulis erectis pubescentibus 40 – 80 cm altis. Inflorescentia umbellata 8 – 25-flores. Flores odorata, candida, 2 cm in diametro. Sepala lanceolata, 7 – 10 mm longa, 1 – 1.5 mm lata, extus tomentosa. Petala ovata, 10 mm longa, 7 mm lata. Lobi corollae 4.5 – 5 mm longi, 3.5 – 4 mm lati, basi semicirculares, apice abrupte mucronati.

Epiphytic undershrub with white latex. Plant pubescent throughout except for on the leaf blade and the corona. Stems erect, 40 – 80 cm long, dark green, with dirty-purple marks towards the base, terete, to 3 mm in diam., with slightly swollen nodes, internodes to 4 cm long, nearly straight. Leaves decussate. Petiole straight, 1–1.3 cm long, 2-3 mm in diam., terete, canaliculate, dark green with dirty purple spots. Leaf blade elliptic or narrowly obovate, 7.5 – 13.5 cm long, 2.5 – 5 cm wide, cuneate at the base, shortly acuminate, entire along margin, slightly succulent, coriaceous, with midrib prominent on lower surface, and with 6 – 9 arching lateral veins, dark green above, light green below, old leaves with few sporadic dirty-purple marks. Inflorescences extra-axillary umbel, commonly with 8 – 25 flowers; peduncle cylindrical, 2 – 2.5 cm long, 2 – 2.5 mm in diam., dark green, tinged with dirty-purple; rachis conical, very short, less than 1 mm long; pedicels light green, slender, 3.5 – 4 cm long, about 0.75 mm in diam. Floral bracts triangular, obtuse, 1.5 – 2 mm long, 0.5 – 0.8 mm broad at the base. Calyx of 5 sepals joined at base, sepals light green, sometimes tinged with dirty purple, lanceolate, obtuse, hairy outside, 7 – 10 mm long, 1 – 1.5 mm wide. Corolla of 5 petals, fleshy, white opalescent, outside with few sparse pink marks, about 2 cm in diam.; petals broadly ovate, glossy, finely

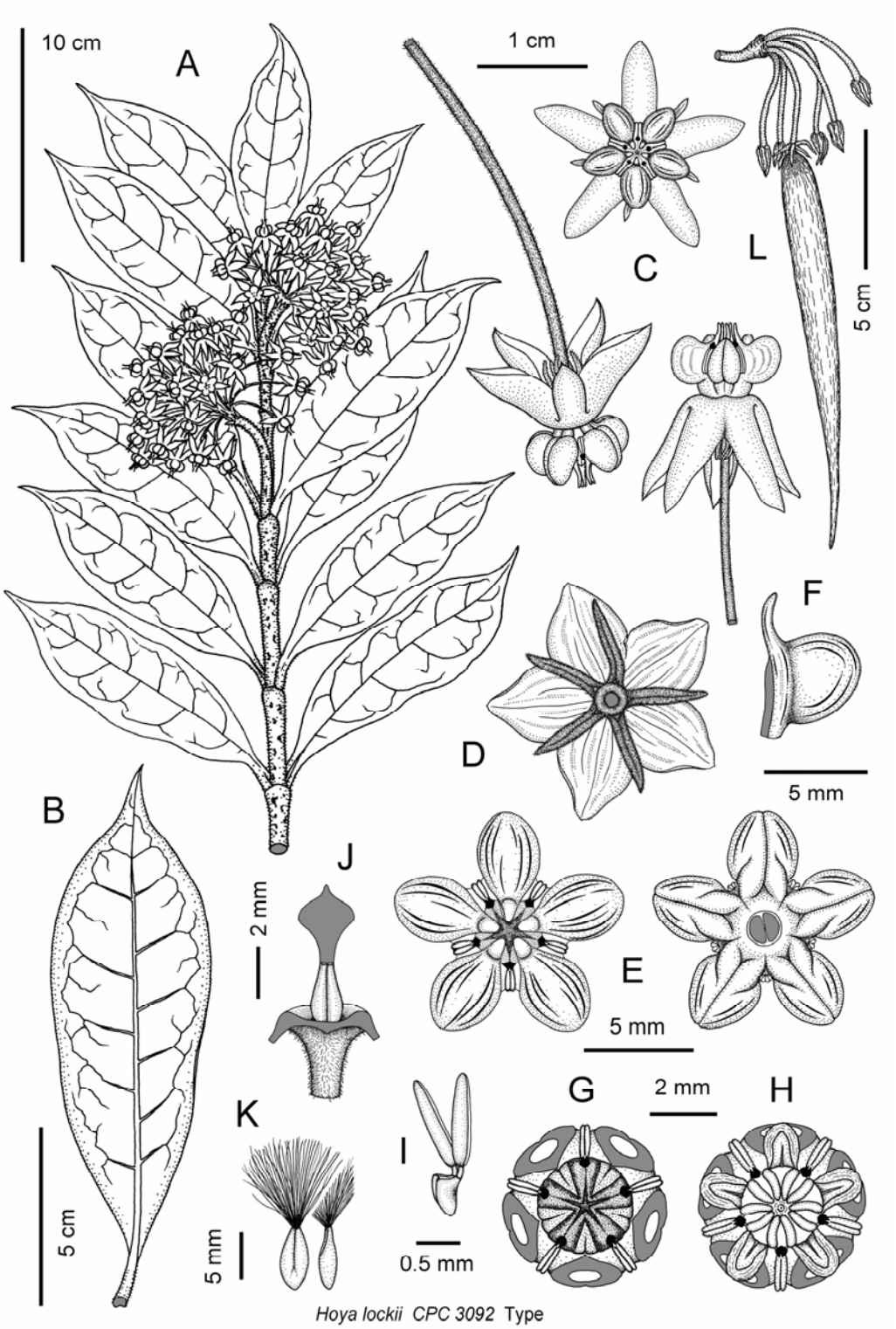

Fig. 1. *Hoya lockii*. A: Upper portion of flowering shoot. B: Leaf, lower surface. C: flowers, view from the top and side views. D: Opening flower, view from beneath. E: Corona (crown), view from the top and from beneath. F: corona lobe, side view. G: Gynostegium with removed corona lobes. H: Gynostegium with removed corona lobes and artificially recurved anther caps. I: pollinarium. J: Ovaries and sagittal section of stylar head. K: Seeds. L: Ripening fruit. (All drown by authors from type specimen – *CPC 3092*).

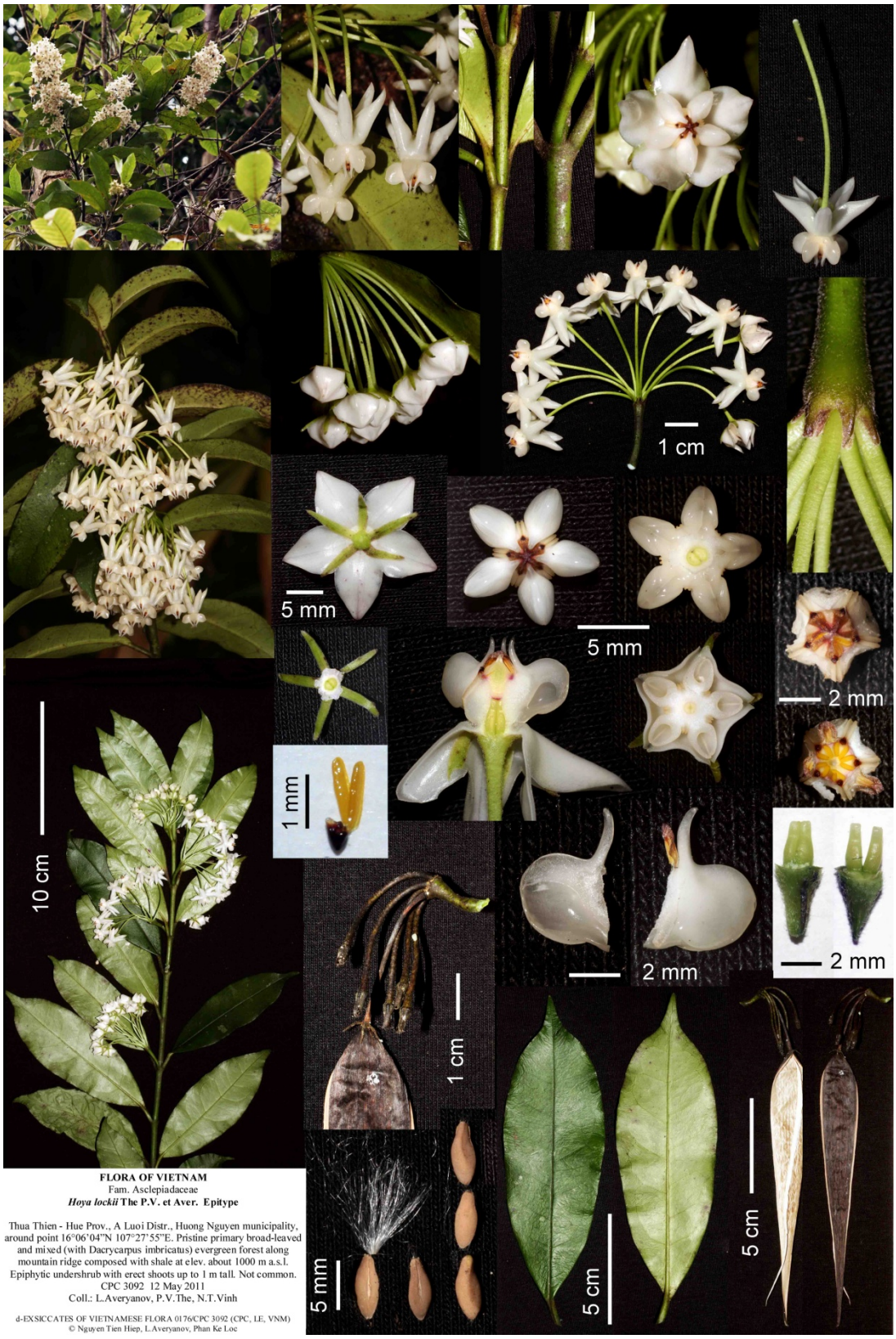

Fig. 2. *Hoya lockii*. Digital epitype (d-EXSICCATES OF VIETNAMESE FLORA *0176/CPC 3092*).

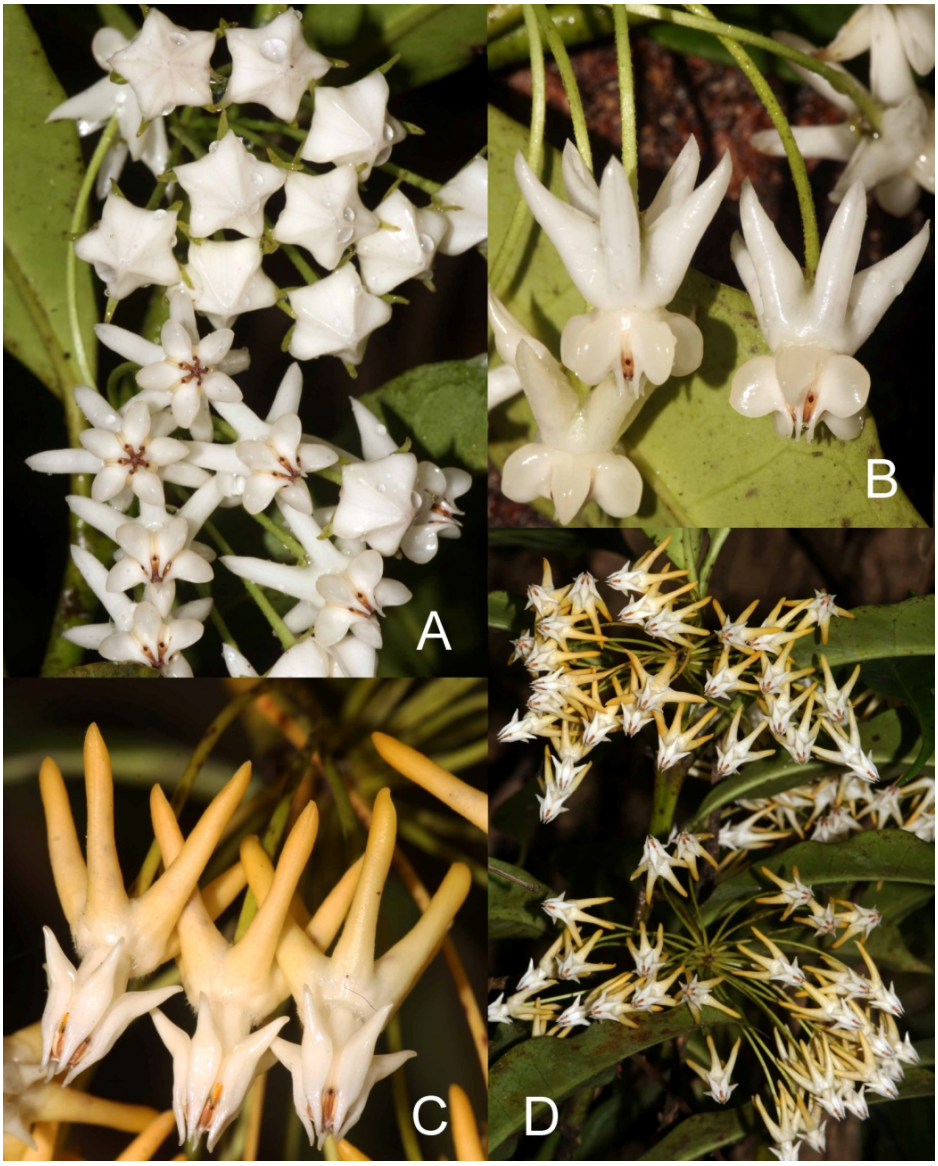

Fig. 3. Inflorescences and flowers of *Hoya lockii* and its closest relative – *H. multiflora*. A, B: *H. lockii* (*Averyanov et al., CPC 3092,* type specimen). C, D: *H. multiflora* (Laos, Phongsali province, Muong May district, *Averyanov, The, P.V., CPC 2433*).

pubescent, obtuse to acute, about 1 cm long, 7 mm wide, spreading to reflexed, with margins recurved from rather straight midvein. Coronas of 5 segments, 5 – 7 mm tall, 9 – 11 mm in diam., with elongate, grooved, white to light pinkish nectary between segments; corona segments glossy white, 4.5 – 5 mm long, 3.5 – 4 mm wide (from side view), at the base almost semicircular, apically attenuate into raised, erect, subulate, acute tips approaching together above gynostegium. Gynostegia shortly cylindrical, 4 – 5 mm tall, 6 – 8 mm in diam., anther caps brownish, tinged with purple, corpuscula dark purple-brown, center of anther table brown-purple. Pollinarium with corpusculum, distinct translators (caudicles) and 2 pollinia; corpusculum rhomboid, about 0.5 mm long and wide, translators very short, less than 0.2 mm long, pollinia narrowly oblong, 1.2 – 1.4 mm long, 0.3 – 0.4 mm wide, golden-yellow, germinating crest light yellow, extending to translator. Ovaries 2, free, superior, light green, cylindrical, 2 – 2.3 mm tall, about 0.6 – 0.8 mm wide, extended apically into broad pyramidal stylar head. Fruits often solitary, narrowly-ensiform follicles, 12.5 – 14.5 cm long, 0.8 – 1 cm in diam., dark grey-brown, splitting longitudinally at one side. Seeds narrowly obovoid, slightly flattened, 6 – 7 mm long, 2.6 – 2.8 mm wide, light brown when dry, apically with white silky coma, 1.2 – 1.4 cm long.

Table 1. Diagnostic morphological characters of *Hoya lockii* and its closest relative - *H. multiflora*.

Characters	*H. lockii*	*H. multiflora*
Stem		
Height	Less than 0.8 m	Up to 2.5 m
Colour	Dark green with dirty purple marks on old stems	Pale gray
Leaves		
Apex	Distinctly acuminate	Indistinctly acuminate
Length	7.5 – 13.5 cm	8 – 18 cm
Width	2.5 –5 cm	2 – 6 cm
Venation	Lateral veins prominent	Lateral veins inconspicuous
Inflorescence and flower		
Peduncle length	2 – 2.5 cm	1.5 – 3 cm
Pedicels length	3.5 – 4 cm	3.5 – 7 cm
Calyx segments size	7 - 10 mm long, 1 – 1.5 mm wide	2.5 mm long, 1.7 mm wide
Corolla colour	Pure opalescent white	Yellowish white to light yellow-orange
Corolla lobe shape	Ovate	Oblong-triangular
Corolla lobe size	About 1 cm long, 0.7 cm wide	About 1.2 cm long, 0.8 cm wide
Corolla diameter	About 2 cm	About 2.5 cm
Basal part of corona lobe	Semicircular	Cuneate
Corona lobe size	4.5 – 5 mm long, 3.5 – 4 mm wide (from side view)	8 – 9 mm long, 1.5 – 2.5 mm wide (from side view)
Corona lobe apex	Suddenly narrowing into a mucronate apex	Gradually narrowing into narrowly-triangular, acute tip
Indumentum		
Hairiness	Pubescent throughout except leaf blade and corona	Glabrous throughout except corolla throat
Ecology		
Habitat	Humid primary broad-leaved and mixed evergreen forests	Open forests and scrub
Elevation	About 1,000 m a.s.l.	500 – 1,200 m a.s.l.
Distribution		
Areal	Vietnam (Thua Thien – Hue)	Vietnam (Ba Vi; Nha Trang), Myanmar, China, Thailand, Laos, Malaysia, Indonesia, Philippines.

Ecology: *Hoya lockii* is a epiphyte growing on large old trees in pristine primary broad-leaved and mixed (with *Dacrycarpus imbricatus*) evergreen forests along mountain ridge composed of shale at elevation about 1,000 m a.s.l. Plants commonly growing on large tree branches in sunny canopy zones at 10 – 20 m above ground. *Hoya lockii* grew in areas in which the present plant species and genera occurred: *Dacrycarpus imbricatus*, *Diplopanax vietnamensis*, *Dipterocarpus kerrii*, *Gironniera subequalis*, *Actinodaphne*, *Diospyros*, *Magnolia*, *Michelia*, *Parakmeria*, numerous palm genera, woody ferns as *Alsophila contaminans*, species of *Tabernaemontana* as well as epiphytic ferns and orchids such as *Aerides odorata*, *Bulbophyllum ngoclinhensis*, *Callostylis rigida*, *Cleisostoma birmanicum*, *Dendrobium spatella*, *Eria obscura*, *E. thao*, *Flickingeria angustifolia* and *Pholidota articulata*.

Distribution: *Hoya lockii* is known only from a very restricted area in the A Luoi district of Thua Thien-Hue province (central Vietnam) at elevation about 1,000 m a.s.l.

IUCN Red List category: Most probably *Hoya lockii* is a Vietnamese endemic plant. Its known habitat is currently degrading due to deforestation, road construction and other human activities. The species is apparently very rare and only known from one population of less than 50 mature individuals. Therefore, we propose that *H. lockii* should be treated as a critically endangered species (CR) according to IUCN Red List Categories and Criteria (IUCN, 2010, version 8.1).

Phenology: Full flowering of *Hoya lockii* was observed during May with fruit formation in June – September.

Etymology: The species is named after the Vietnamese botanist – Prof. Phan Ke Loc.

Note: *Hoya lockii* resembles morphologically of *H. multiflora* Blume (Fig. 3), which was described from Java in 1823, and which also occurs in Vietnam. Both species are similar in having straight, erect (not climbing) shoots, as well as in similar leaf venation, shape and size. However, the new species distinctly differs from

H. multiflora in being hairy in all parts of the plant except for the leaf blade and the corona, as well as in having opalescent, white corolla lobes and corolla lobes, mucronate at the apex (Fig. 3; Table 1). Flowers of *H. lockii*, which are almost scentless during the diurnal hours become very fragrant towards the evening and emit strong chocolate scent at night.

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越南的新種 –*Hoya lockii*（夾竹桃科，蘿藦亞科 Apocynaceae, Asclepiadoideae）

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摘要：本文描述並說明在越南中部的順化省（Thua Thien-Hue Province）所發現的新種 *Hoya lockii*（夾竹桃科，蘿藦亞科）。*H. lockii* 和與之關係密切的物種 *H. multiflora* Blume 進行了形態特徵的比較。*Hoya lockii* 不同於 *H. multiflora* 在於除了葉身及副花冠，其他所有的部位均被有柔毛；以及具有白色至乳白色的花冠裂片和先端突尖的副花冠。

關鍵詞：夾竹桃科、越南植物誌、*Hoya lockii*、INCU 紅皮書、新種、植物多樣性、分類學。