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***Hoya thuhae* (Apocynaceae, Asclepiadoideae), a new species and *H. lobbii*, new record for Vietnam**

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Summary. A new species, *Hoya thuhae* (Apocynaceae, Asclepiadoideae), from lowland areas of central Vietnam, is described. It resembles *H. kerrii* but may be distinguished by its finely pubescent petioles, puberulous leaf blade, longer peduncle, longer pilose to strigose pedicels, different shape of the calyx lobes, and elliptic corolla segments with apices raised above the central portion. Additionally, *H. lobbii*, known earlier in NE India, Thailand, and Cambodia, is recorded for Vietnam at first. Data on the ecology, phenology, distribution, and conservation status for both species are provided, together with plates compiled from original color analytical photos.

***Hoya thuhae* (Апосинасеае, Аскепиадоидеае), новый вид и *H. lobbii*, новая находка для Вьетнама**

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Ключевые слова: разнообразие растений, таксономия растений, флора Вьетнама, *Hoya kerrii*.

Аннотация. Новый для науки вид – *Hoya thuhae* (Аросунные, Асклепиевые) – описан из равнинных районов Центрального Вьетнама. Он похож на *H. kerrii*, но отличается коротко опушёнными черешками, опушённой листовой пластинкой, более длинной цветоножкой, более длинными жёстко волосистыми цветоножками, иной формой долей чашечки и эллиптическими долями венчика с приподнятыми над центральной частью верхушками. Кроме того, *H. lobbii*, ранее известный из северо-восточной Индии, Таиланда и Камбоджи, впервые отмечен для Вьетнама. Приводятся данные по экологии, фенологии, распространению и природоохранному статусу обоих видов, а также таблицы, составленные из оригинальных цветных аналитических фотографий.

Introduction

The genus *Hoya* R. Br. (Brown, 1810) is one of the largest in the family Apocynaceae (subfam. Asclepiadoideae, tribe Marsdenieae), comprising 686 accepted species distributed in Asia, the Tropical Pacific Islands, and northeastern Australia (Li et al., 1995; Forster, Liddle, 1996; Forster, 2006; Liddle, 2009; Rodda, 2015; Averyanov et al., 2017; Nguyen et al., 2023; Tran et al., 2024; POWO, 2025). Recent discoveries in Vietnam include *Hoya lamthanhae* Pham et Kloppenburg (Pham et al., 2020), *H. honglenae* Aver., Vuong, Bao et V. C. Nguyen (Nguyen et al., 2023), and *H. sungwookii* Aver., Vuong, Nhan et V. C. Nguyen (Tran et al., 2024), as well as such new records as *H. acuminata* (Wight) Benth. ex Hook. f. and *H. phuwaensis* Kidyoo (Nguyen, 2023). Although several new species have been discovered in recent years, the diversity of *Hoya* in Vietnam remains incompletely inventoried. During a recent botanical survey in lowland areas of Dak Lak Province of southern Vietnam, two unusual species were discovered. After careful morphological studies, one species was identified as *H. lobbii*, a new species for the flora of Vietnam, formerly known from NE India, Thailand, and Cambodia. Living plants of the second species remained unidentified before they formed flowers under cultivation in Buon Ma Thuot City (Dak Lak Province) in 2024. This species appears to be new to science and therefore described here under the name *H. thuhae*. The mentioned discoveries increase the total number of the *Hoya* species recorded in Vietnam to 46, eleven of which are local national endemics (Averyanov et al., 2017; Pham et al., 2020; Nguyen et al., 2023; Tran et al., 2024). All species that are currently known to exist in

Vietnam's flora, including the two that are reported in this work, are listed in Table 1.

Materials and methods

The measurements and species description are based on living plants and herbarium specimens. Type herbarium and additional material are stored in the LE (Komarov Botanical Institute, Russia) and VNM (Institute of Life Sciences, Vietnam) Herbaria. The terminology for the morphological description follows Harris J. et Harris M. (2006), Randal (2008), Hickey et King (2013), Beentje (2016), and Simpson (2019). Scanned images and associated supplementary analytical photos are kept in the database “Herbarium LE” (<https://en.herbariumle.ru>).

Taxonomic treatment

Hoya R. Br., 1810, Prodr. Fl. Nov. Holland.: 459.
Type: *Hoya carnosa* (L. f.) R. Br., 1810, Prodr. Fl. Nov. Holland: 460.

≡ *Asclepias carnosa* L. f., 1782, in Suppl. Pl.: 170.

686 species in Asia, Tropical Pacific Islands, and NE Australia (POWO, 2025). In Vietnam 46 species, 11 are endemic, including the species reported in this article (Averyanov et al., 2017; Nguyen et al., 2023; Tran et al., 2024).

Hoya lobbii Hook. f., 1883, Fl. Brit. India 4: 54; Averyanov et al., 2017, Turczaninowia 20, 3: 124 (Fig. 1).

Described from NE India: “Khasia Mts.; Nowgong, alt. 1600 ft, Thos. Lobb”. Lectotype (“T. Lobb s. n.”) – K [K000873093] (Averyanov et al., 2017: 124).

Table 1. *Hoya* species documented currently in the flora of Vietnam
(species endemic to Vietnam are marked by an asterisk)

<i>Hoya acuminata</i> (Wight) Hook. f.	<i>H. griffithii</i> Hook. f.
<i>H. arnottiana</i> Wight	<i>H. hainanensis</i> Merr.
<i>H. bonii</i> Costantin*	<i>H. hanhiae</i> V. T. Pham et Aver.*
<i>H. burmanica</i> Rolfe	<i>H. honglenae</i> Aver. et al.
<i>H. chinghungensis</i> (Tsiang et P. T. Li) M. G. Gilbert et al.	<i>H. ignorata</i> T. B. Tran et al.
<i>H. crassipetiolata</i> Aver., V. T. Pham et T. A. Le*	<i>H. kerrii</i> Craib
<i>H. diversifolia</i> Blume	<i>H. lanceolata</i> D. Don
<i>H. erythrina</i> Rintz	<i>H. lamthanhae</i> V. T. Pham et Kloppenb.*
<i>H. erythrostemma</i> Kerr	<i>H. linearis</i> D. Don
<i>H. fungii</i> Merr.	<i>H. lobbii</i> Hook. f.
<i>H. fusca</i> Wall.	<i>H. lockii</i> V. T. Pham et Aver.*
<i>H. globulosa</i> Hook. f.	<i>H. longipedunculata</i> V. T. Pham et Aver.*
<i>H. loyceandrewsiana</i> T. Green	<i>H. pachyclada</i> Kerr
<i>H. lyi</i> H. Lev.	<i>H. pandurata</i> Tsiang
<i>H. mengtzeensis</i> Tsiang et P. T. Li	<i>H. parviflora</i> Wight
<i>H. micrantha</i> Hook. f.	<i>H. phuwuaensis</i> Kidyoo
<i>H. minima</i> Costantin	<i>H. revolubilis</i> Tsiang et P. T. Li
<i>H. multiflora</i> Blume	<i>H. sapaensis</i> T. B. Tran et Rodda*
<i>H. nummularia</i> Hook. f.	<i>H. sungwookii</i> Aver. et al.*
<i>H. nummularioides</i> Costantin	<i>H. thuathienhuensis</i> T. B. Tran et al.*
<i>H. tamdaoensis</i> Rodda et T. B. Tran	<i>H. thuhiae</i> Aver. et al.*
<i>H. nutans</i> V. T. Pham et Aver.*	<i>H. vaccinioides</i> Hook. f.
<i>H. oblongacutifolia</i> Costantin	<i>H. verticillata</i> (Vahl.) G. Don

Habitat and phenology in Vietnam. Humus epiphytic and lithophytic undershrub in evergreen broad-leaved forests on granite at elevation of 300–700 m a. s. l. Very rare. Flowers in March and April.

Distribution. Vietnam (Dak Lak and Quang Binh provinces). NE India, Thailand, Cambodia.

Nature conservation status – Estimated conservation status according to terms and criteria of IUCN Red List (IUCN, 2025) – DD.

Notes. Since this species was previously discovered in NE India, Thailand, and Cambodia, its discovery in Vietnam was expected. It is documented here for the flora of Vietnam at first.

Studied specimens. VIETNAM: “Dak Lak Province, Krong Bong District, Yang Hanh Commune, evergreen broad-leaved forest at elevation of about 700 m a. s. l., along small stream, living plants in nature. 11 VIII 2018. Nguyen Van Canh, AL4499” (photos LE, LE 01203508, <https://en.herbariumle.ru/?t=occ&id=267522>); “flowering plants cultivated in Buon Ma Thuot City. 6 IV 2020. Nguyen Van Canh, AL4500”

(photos LE, LE 01203509, <https://en.herbariumle.ru/?t=occ&id=267523>). “Quang Binh Province, Minh Hoa District, lowland evergreen broad-leaved forest at elevation of 300–400 m a. s. l., living plant collected in nature by Nguyen Van Canh, AL4498” (photos, LE 01203507, <https://en.herbariumle.ru/?t=occ&id=267375>); “flowering plants cultivated in Buon Ma Thuot City. 28 III 2025. Nguyen Van Canh, AL3767” (photos LE, LE 01255685, <https://en.herbariumle.ru/?t=occ&id=258637>); herbarium specimen prepared from plants cultivated in Buon Ma Thuot City on 28 March 2025, Nguyen Van Canh, AL3824 (LE 01318007, <https://en.herbariumle.ru/?t=occ&id=266340>).

Hoya thuhiae Aver., Vuong et V. C. Nguyen, **sp. nov.** (Fig. 2).

Diagnosis. The new species morphologically close to *Hoya kerrii* Craib, common in Indochina, but differs in finely pubescent petioles, puberulous leaf blade (vs. glabrous), peduncle 5–6 cm long (vs. 2.5–3 cm), pedicels up to 2.5 cm, pilose to strigose (vs. 1.5–1.8 cm long, puberulous), triangular-ovate

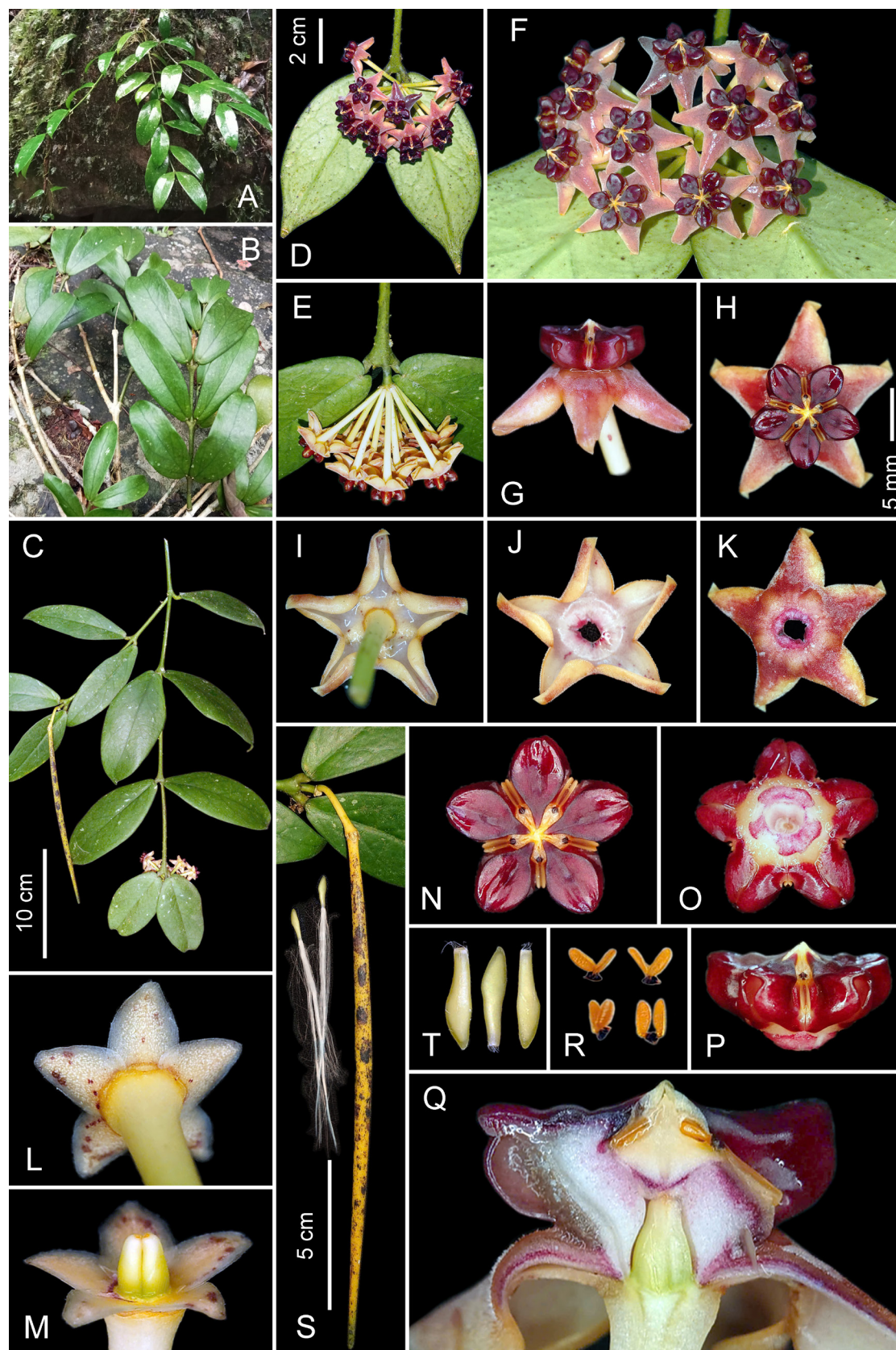


Fig. 1. *Hoya lobbiai*: A, B – plants in natural habitat; C – flattened shoot with flowers and fruit; D–F – intact inflorescences, view from different angles; G–I – flower, side view (G), front view (H), and view from below (I); J, K – corolla, view from below (J) and from above (K); L, M – calyx, view from below (L) and side view (M) showing pistils; N–P – corona, front view (N), view from below (O), and side view (P); Q – sagittal section of the flower; R – pollinaria; S – not open fruit and seeds; T – seeds without pappus. Photos by Nguyen Van Canh from specimens AL3767 and AL4498, graphic correction and design by L. Averyanov and T. Maisak.

calyx lobes with obtuse apices (vs. calyx lobes elliptic-ovate with rounded apices), and corolla segments pink, elliptic, 3.5–4 mm long, 2–2.3 mm wide, with apices slightly retuse, raised above the rest part of the segment (vs. corolla segments reddish with yellow, obovate to broadly obovate, rounded, ca. 2 mm long, 1 mm wide, not raised above the rest part of the segment) (see Table 2).

Type: “Vietnam, Dak Lak Province, Yok Don National Park, dipterocarp forest at elevation of about 200 m a. s. l., living plant obtained from local collectors in 2018 by Nguyen Van Canh. The type herbarium specimen and photos were prepared from plants cultivated in Buon Ma Thuot City. 10 V 2024. Nguyen Van Canh, L. Averyanov, T. Maisak, AL3137” (holo – LE 01276307!, <https://en.herbariumle.ru/?t=occ&id=229899>). Photos of plant used for the preparation of the type specimen LE 01255021, <https://en.herbariumle.ru/?t=occ&id=228060>, LE 01255119 <https://en.herbariumle.ru/?t=occ&id=228061>.

Paratype: “Vietnam, Dak Lak Province, Yok Don National Park, dipterocarp forest at elevation of about 200 m a. s. l. 12 VI 2020. Nguyen Van Canh, Truong Ba Vuong, BV 1946” (VNM 00074065!).

Etymology. The new species is named after local collector Mrs. Dinh Thu Ha, who kindly provided the living materials for cultivation in the Buon Ma Thuot City Nguyen Van Canh Garden, where the holotype was prepared.

Description. Herbaceous to semi-woody, epiphytic, climbing vine, with white latex in all vegetative parts. **Stem** slender, terete, glabrous, to 2 m long, about 3 mm in diameter, greenish, olive, pale brownish, or brownish gray, glabrous, with internodes 1.8–10 cm long. **Leaves** petiolate; petiole

stout, terete, up to 2 cm long, 10–11 mm in diameter, straight to curved, light green to green, finely pubescent; leaf blade thick, fleshy, broadly cordate to obcordate, 7–11 cm long, 6–10 cm wide, puberulous on both sides, apex emarginate, slightly retuse or truncate, at the base rounded, entire and straight along the margins, adaxial surface grassy green to dark green; abaxial surface light green, main and secondary veins hardly visible. **Inflorescence** erect, pedunculate, dense umbelliform raceme, 3–4 cm in diameter, usually with 17–20 flowers; peduncle rather stout and straight or slightly curved, terete, perennial, 2–6 cm long, 5–6 mm in diameter, light green, green or brown, puberulous; rachis terete, swollen, 8–12 mm in diameter, with small brownish persistent floral scars; pedicels terete, slender, light green to green, 2–2.5 cm long, 2–3 mm in diameter, densely white strigose or pillose. **Flowers** pentamerous, widely opening, 8–10 mm across, corolla down curved to strongly involute. **Calyx** yellowish green, flat, ca. 6 mm in diameter, 5-lobed; lobes triangular-ovate, 2–2.5 mm long, apex obtuse, glabrous on both sides, abaxially finely verruculose, margin membranaceous, entire, ciliate. **Corolla** entirely white, 5-lobed; lobes connate on ca. 4 mm from the base, down curved, at apex involute, broadly ovate, 5–6 mm long, 4–5 mm wide (when flatten), apex acute; lobes inside pubescent with white stiff hairs, longer at apical half, outside glabrous, with sparse, minute warts. **Corona** ca. 8 mm in diameter, 2–2.5 mm tall, almost flat at apex, of 5 segments; segments pink to pale purple, glossy, glabrous; each segment (from above) obovate, 3.5–4 mm long, 2–2.3 mm wide; outer angle round, distally from below with longitudinal groove; inner angle conoid, as long as anthers, as high as or little

Table 2. The comparative morphological characters of *Hoya thuhae* and *H. kerrii*

	<i>Hoya thuhae</i>	<i>Hoya kerrii</i>
Leaves surface	puberulous on both sides	glabrous
Petiole surface	finely pubescent	glabrous
Pedicel indumentum	densely white strigose/pillose	finely puberulous
Pedicel length	2–2.5 cm	ca. 2 cm
Calyx color	yellowish-green	light yellowish to almost white
Calyx lobes shape	triangular-ovate, obtuse	elliptic-ovate, rounded at apex
Corona color	pink to pale purple	red to dark red
Corona diameter	8 mm	5 mm
Corona segments shape and size (from above)	obovate, 3.5–4 mm long, 2–2.3 mm wide	obovate to broadly obovate, ca. 2 mm long, 1 mm wide
Ovary shape	ovoid to broadly ovoid	narrowly ovoid

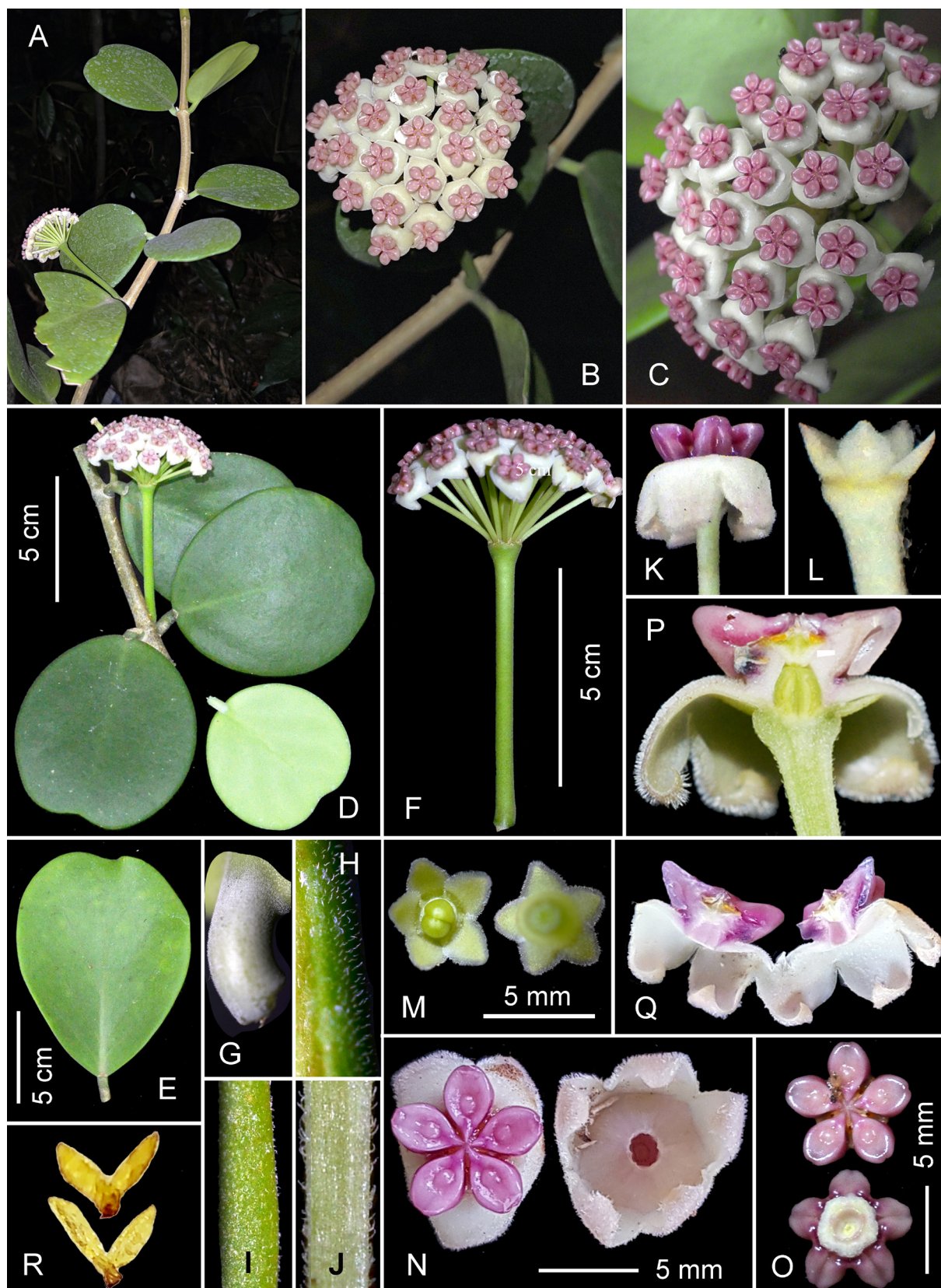


Fig. 2. *Hoya thuhae*: A – intact flowering plant; B – inflorescence; C – portion of inflorescence; D – flattened flowering shoot and separated leaf (abaxial side); E – leaf (adaxial side); F – inflorescence, side view; G – petiole; H – leaf indumentum on adaxial surface; I – leaf indumentum on abaxial surface; J – indumentum of pedicel; K – flower, side view; L – calyx, side view (corolla removed); M – calyx, view from above and from below; N – corolla, view from above and from below; O – corona, view from above and from below; P – flower, sagittal section; Q – corolla, sagittal section; R – pollinaria. Photos by Truong Ba Vuong from specimen BV1946, graphic correction and design by L. Averyanov and T. Maisak.

longer the gynostegium apex. **Gynostegium** with 5 anthers; pollinaria with very small corpusculum, and 2 pollinia; corpusculum pyramidal, dark brown; pollinium narrowly oblong to oblong, ca. 0.6 mm long, apex acute to sub-acute. **Style head** discoid-oblately, apex broadly conoid, obtuse or triangular acute, ca. 1 mm tall and ca. 2 mm in diameter, tightly connivent to adjacent parts of the flower. **Ovary** ovoid to broadly ovoid, ca. 2 mm long, with 2 carpels, carpels free, strongly connivent with each other, articulated apically to style head. **Fruits and seeds** not seen.

Habitat and phenology. Epiphytic creeping vine on trunks of *Dipterocarpus* ssp. in lowland dipterocarp

forests on ferrallitic soil at elevation of about 200 m a. s. l. Not common. Flowers in April and May.

Distribution. Vietnam (Dak Lak Province). Endemic to lowland areas in central Vietnam.

Nature conservation status. Estimated conservation status according to terms and criteria of IUCN Red List (IUCN, 2025) – DD.

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