Hoya of Sumatra, an updated checklist, three new species, and a new subspecies

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Abstract. The list of the species of Hoya R.Br. occurring on the Indonesian island of Sumatra is updated and the type citation is clarified. Sixteen taxa are added to the latest checklist. Hoya danumensis subsp. amarii S.Rahayu & Rodda subsp. nov., H. rigidifolia S.Rahayu & Rodda sp. nov., H. solokensis S.Rahayu & Rodda sp. nov., and H. sumatrana S.Rahayu & Rodda sp. nov. are newly described. Hoya parviflora Wight, H. parvifolia Schltr., and H. purpureofusca Hook. are lectotypified.

Keywords. Apocynaceae, Asclepiadaceae, Asclepiadoideae, Indonesia, Marsdenieae.


Introduction

Indonesia has been predicted to have the most diverse array of species of Hoya R.Br (Brown 1810; Kleijn & van Donkelaar 2001). However, a full inventory of Hoya occurring in Indonesia is yet to be completed. Indonesia is an extremely large and diverse country and our plan is to complete an inventory and revision of the Indonesian Hoya working on seven separate geographical areas: Sumatra, Java, Kalimantan, Lesser Sunda Islands, Sulawesi, Maluku, and Indonesian New Guinea.

Recent papers on Indonesian Hoya were published by Kleijn & van Donkelaar (2001), who revised the genus in central Sulawesi, where 13 species occur; by Rahayu & Wanntorp (2012), who published a checklist and a key to the Hoya of Sumatra that included 27 species; and lastly by Lamb & Rodda (2016), who published a checklist of the Bornean species including 72 species, 34 of which occurring in Kalimantan. The most recently published Hoya from Sumatra is H. fauziana subsp. angulata Rodda et al. (2018).

The present paper aims at updating the checklist and clarifying the type citation of all the taxa of Hoya from Sumatra. Three species and one new subspecies are newly published: H. danumensis subsp. amarii S.Rahayu & Rodda subsp. nov., H. rigidifolia S.Rahayu & Rodda sp. nov. (based on material identified by Rahayu & Wanntorp (2012) as H. oblaneelata Hook.f.), H. solokensis S.Rahayu & Rodda sp. nov., and H. sumatrana S.Rahayu & Rodda sp. nov.
Material and methods

The present paper is based on the examination of specimens at B, BO, BM, K, and SING, as well as JSTOR Global Plants (https://plants.jstor.org/, accessed on 24 Jul. 2018) and on field-collected plants cultivated at the Bogor Botanic Gardens. All names have been verified on International Plant Names Index (http://www.ipni.org/, accessed on 24 Jul. 2018) and TROPICOS (http://www.tropicos.org/, accessed on 24 Jul. 2018). All protologues and type citations have been verified on Biodiversity Heritage Library (https://www.biodiversitylibrary.org/, accessed on 24 Jul. 2018), JSTOR (https://www.jstor.org/, accessed on 24 Jul. 2018) or at the Singapore Botanic Gardens library. Heterotypic synonyms are indicated only when based on types from Sumatra. All acronyms for repositories follow Thiers (2019).

Results

Checklist of the genus *Hoya* of Sumatra

- **Class Magnoliopsida Brongn.**
- **Subclass Asteridae Takht.**
- **Order Gentianales Juss. ex Bercht. & J.Presl**
- **Family Apocynaceae Juss.**
- **Genus *Hoya* R.Br.**

*Hoya andalensis* Kloppenb.


**Type material**

*Holotype*

INDONESIA • Sumatra, Padang, Air Sirah; in a young secondary forest; cultivated in USA, California, Fresno, vouchered on 19 Aug. 2004; UC n.v.

*Hoya beccarii* Rodda & Simonsson


**Type material**

*Holotype*

MALAYSIA • Sarawak, Matang; Jul. 1866; O. Beccari 6536a leg.; FI.

*Isotype*

MALAYSIA • Same data as for the holotype; FI.

*Hoya brooksii* Ridl.


**Type material**

*Lectotype* (designated by Turner *et al.* 2018)

INDONESIA • Sumatra, Lubuk Tandai; Jun. 1922; C.J. Brooks 7615 leg.; K000613013.
**Hoya campanulata** Blume


**Type material**

- **Lectotype** (designated by Rodda et al. 2016)
  INDONESIA • Java, “ex horto, mento septembre, Tjunkankan, Burangarang”; L0004389.

**Hoya caudata** Hook.f.

*The Flora of British India* 4: 60 (Hooker 1883).

**Type material**

- **Lectotype** (designated by Rintz (1978), first step, and then by Rodda (2017), second step)
  MALAYSIA • Malacca, A.C. Maingay 1956 leg.; Kew distrtribution no. 1128; K000895134.

- **Isolectotypes**
  MALAYSIA • Same data as for the lectotype; K000895133, L0004315.

**Hoya coriacea** Blume

*Bijdragen tot de flora van Nederlandsch Indië*: 1063 (Blume 1826).

**Type material**

- **Lectotype** (designated by Rodda 2017)
  INDONESIA • “In fruticetis ad pedem montis Salak” [Java, Salak]; L (sheet no. 898.168–117).

- **Possible isolectotype**
  INDONESIA • Same data as for the lectotype; P00639838.

**Hoya coronaria** Blume


**Type material**

- **Lectotype** (designated by Kleijn & van Donkelaar 2001: 469)
  INDONESIA • Java; sine coll. “124/6” leg.; L (sheet no. 898.168–121).

- **Isolectotype**
  INDONESIA • Same data as for the lectotype; L (sheet no. 898.168–128).
Etymology
The new species is named after Amar Husein Sitompul, who collected the type specimen.

Type material
Holotype
INDONESIA • Sumatra, North Sumatra, Padang Sidempuan; ca 900 m a.s.l.; 16 Sep. 2014; Amar Husein Sitompul s.n. leg.; BO.

Description
Epiphytic shrub, with white latex in all vegetative parts. Roots only basal, no adventitious roots observed. Stems erect or spreading, 4–6 mm in diameter, bright green, sparsely pubescent when young; older stems grey, glabrous; internodes 2–4(6) cm. Leaf blades 5–12 × 2.5–5 cm, thin, not succulent, chartaceous when dry, broadly lanceolate to oblong, base rounded, apex acuminate or caudate, mid green on adaxial surface, pale green on abaxial surface, glabrous (sparsely pubescent when young), venation pinnate, midrib slightly depressed on adaxial surface, convex on abaxial surface, secondary veins 3–7 pairs, basal colleters absent; petioles 5–10 × 2–3 mm, terete, channelled above, twisted, mid green, sparsely pubescent when young, otherwise glabrous. Inflorescences sciadioidal, convex, of 5–15 flowers, with peduncles extra-axillary, positively geotropic, unbranched, one at each node, producing flowers subsequently a few times, terete, 10–15 × 1.5–2.5 mm, green, sparsely pubescent when very young. Flowers with terete pedicels 2.5–3 cm × 0.06–0.08 mm, pale green, glabrous. Calyx lobes triangular, apex round, 1.5–2 × 0.5–0.6 mm, sparsely pubescent outside or glabrous, inside glabrous, ciliate; basal colleters 0.15–0.25 × 0.15–0.2 mm, one at each calyx sinus, ovoid. Buds globose, 5-ridged, dark brown or deep purple when young, turning green. Corolla shallowly campanulate, 20–23 mm in diameter; tube 9–11 mm long, creamy white, glabrous outside, pilose inside, basally densely pubescent; lobes 2–3 × 11–12 mm, very broadly triangular, valvate in bud, creamy white, glabrous outside, very sparsely pubescent inside, tip glabrous. Corona staminal 4–5 mm high, 10–12 mm in diameter, stiff and waxy-looking, white; lobes 4.5–5 × 2.3–2.5 mm, spreading, ovate, attached at the back of the anthers, inner process apiculate, not touching in the middle, outer process acute with a rounded tip, lobes with revolute margin underneath. Anthers ca 0.7 × 0.5 mm, ovate, with apical round membranaceous appendage covering the style-head apex. Pollinia 550–650 × 220–270 μm, oblong, with a round base and an obliquely truncated apex; pellucid margin present all along the outer edge; caudicles ca 280 × 180 μm, broadly triangular, almost transparent; corpusculum 300–350 × 100–120 μm, oblong; style-head 5-angled in cross section, with five spreading lobes alternating with the stamens, style-head depressed with a central raised conical apex ca 0.5 × 0.5 mm broad at the base, apex rounded; ovary 1.4–1.6 mm high, 0.3–0.4 mm in diameter, narrowly conical, apex acute. Fruit and seed not observed.

Distribution and habitat
Hoya danumensis subsp. amarii subsp. nov. is only known from the type locality in northern Sumatra, Indonesia, ca 900 m a.s.l.

Conservation status
Known only from a single collection and lacking information on the distribution area, the population size and the possible threats to the habitat, H. danumensis subsp. amarii is considered as Data Deficient (DD) (IUCN 2012).
Notes

_Hoya danumensis_ subsp. _amarii_ subsp. nov. can be separated from _H. danumensis_ Rodda & Nyhuus (2009) subsp. _danumensis_ because of the shape and size of the corolla that is shallowly campanulate, 20–23 mm in diameter and deeply campanulate, vs 25–35 mm in the latter; in the shape and size of the corona lobes that are ovate-oblong and 5.5–6 × 2.4–2.6 mm in _H. danumensis_ subsp. _danumensis_ vs ovate and 4.5–5 × 2.3–2.5 mm in the new subspecies.

_Hoya deykeae_ T.Green

_Fraterna_ 13 (1): 15 (Green 2000) [published as “_H. deykei_”].

**Type material**

_Holotype_

INDONESIA • Sumatra; R. van Donkelaar & D. Jannink 03–90 IPPS 4094 leg.; cultivated in USA, Hawaii, Oahu, Ka’a’awa, vouched as ‘T. Green 9903’; BISH1014777.

_Hoya diversifolia_ Blume

_Bijdragen tot de flora van Nederlandsch Indië_ 1064 (Blume 1826).

**Type material**

_Lectotype_ (designated by Rodda 2017)

Rumphius (1747: tab. 175 fig. 2).

_Epitype_ (designated by Rodda 2017)

INDONESIA • “_Hoya heterophylla_”; L (sheet no. 989168–147).

_Hoya elliptica_ Hook.f.

_The Flora of British India_ 4: 58 (Hooker 1883).

**Type material**

_Lectotype_ (designated by Rodda 2017)

MALAYSIA • Malacca; 1 Apr. 1868; A.C. Maingay 3286 leg.; Kew distribution no. 1137; K000895126.

_Isotype_ (designated by Rodda 2017)

MALAYSIA • Same data as for the lectotype; K000895127.

_Hoya fauziana_ subsp. _angulata_ Rodda, A.L.Lamb, Gokusing & S.Rahayu

_Blumea_ 63: 144 (Rodda et al. 2018).

**Type material**

_Holotype_

MALAYSIA • Sabah, Tawau, Kalabakan area; 16 May 2017; L. Gokusing LG56/2017 leg.; mixed hill Dipterocarp forest; SAN.

_Hoya finlaysonii_ Wight

_Contributions to the Botany of India_ 38 (Wight 1834).
Type material

**Lectotype** (designated by Rodda 2017)
MALAYSIA • Penang?; ex herb. Finlayson, Wallich Asclepiad no. 42 (B = Wallich Catalogue 8166B); K000895121.

**Isolectotypes**
MALAYSIA • Same data as for the lectotype; K001129114, E00179577.

*Hoya forbesii* King & Gamble

*Journal of the Asiatic Society of Bengal* 74 (2): 574 (King & Gamble 1908).

Type material

**Lectotype** (designated by Rodda 2017)
INDONESIA • Sumatra, Kaba Volcano; 1881; H.O. Forbes 2896a leg.; K000894730.

*Hoya glabra* Schltr.

*Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* 40 (92): 14 (Schlechter 1908).

Type material

**Lectotype** (designated by Rodda 2017)
INDONESIA • Borneo, Long Wahau; 2 Aug. 1901; R. Schlechter 13458 leg.; B100277199.

Other material examined
INDONESIA • Sumatra, Monkey reserve; 2°41.589´N, 98°55.656´E; 1215 m a.s.l.; I.M. Liddle 1552 leg.; top of ridge; Singapore Botanic Gardens living collections no. 20123057, vouchered on 11 Feb. 2013 as ‘M. Rodda MR286’; SING.

*Hoya imperialis* Lindl.

*Edwards’s Botanical Register* 32: tab. 68 (Lindley 1846).

Type material

**Lectotype** (designated by Rodda 2017)
MALAYSIA? • Ex herb. J. Lindley [cultivated, from Sarawak via Lowe’s Nursery]; CGE06041.

*Hoya kastbergii* Kloppenb.


Type material

**Holotype**
MALAYSIA • Sarawak, Bau; I.S.A. Kastberg s.n. leg.; UC, missing.

**Neotype** (designated by Rodda 2017)
**Isoneotype**  
MALAYSIA • Same data as for the neotype; K.

*Hoya lacunosa* Blume

*Bijdragen tot de flora van Nederlandsch Indië*: 1063 (Blume 1826). — *Otostemma lacunosum* (Blume) Blume, *Rumphia* 4: 30 (Blume 1849b).

**Original citation**

“Circa Buitenzorg at arbores”.

**Type material**

*Lectotype* (designated by Rodda 2017)  
INDONESIA • “*Hoya lacunosa*”; L [sheet no. 898168–188].

*Hoya lasiantha* (Korth. ex Blume) Miq.


**Original citation**

“Ad montem Pamotton insulæ Borneo”.

**Type material**

*Lectotype* (designated by Rodda 2017)  
MALAYSIA/INDONESIA? • Borneo; P. Korthals s.n. leg.; U1102625.

*Epitype* (designated by Rodda 2017)  
Blume (1849a: fig. 14).

*Hoya latifolia* G. Don


**Type material**

*Lectotype* (designated by Rodda 2017)  
MALAYSIA • Penang; Wallich Asclepiad no. 138 (A = Wallich Catalogue 8161A); K000895124.

*Isolectotype*  
MALAYSIA • Same data as for the lectotype; CGE (two sheets, one of which also containing leaves of *H. mitrata*), E00179576, K000895125.

*Hoya mitrata* Kerr nom. cons.

*Hooker’s Icones Plantarum* 35: tab. 3406 (Kerr 1940).
Type material

**Lectotype** (designated by Rintz 1978)
THAILAND • Surat, Ban Tong Tao; A.F.G. Kerr 13152 leg.; K.

*Hoya multiflora* Blume


Type material

**Lectotype** (designated by Rodda 2017)
INDONESIA • Java, “prope flumine Tjapaes[?] Kietpil[?], Salleh”; 16 Sep. 1820; L2727033.

*Hoya obtusifolia* Wight

*Contributions to the Botany of India*: 38 (Wight 1834).

Type material

**Holotype**
MALAYSIA • Penang?; Wallich Asclepiad no. 38 (Wallich Catalogue 8167); K000895115.

**Isotypes**
MALAYSIA • Same data as for the holotype; E00179578, K001129115.

*Hoya omlorii* (Livsh. & Meve) L.Wanntorp & Meve


Type material

**Holotype**
INDONESIA • Sumatra, Aceh, Gunung Leuser Reserve, Camp Simpang and vicinity; 19 Aug. 1972; W.J.J.O. de Wilde & B.E.E. de Wilde-Duyfjes 14377 leg.; L.

**Isotype**
INDONESIA • Same data as for the holotype; K.

*Hoya parviflora* Wight

*Contributions to the Botany of India*: 37 (Wight 1834).

Synonym

Type material

Lectotype (designated here)
MYANMAR • “Maulmyne”; HRWP, Wallich Wall. Asclep. 33; K000895132.

_Hoya parvifolia_ Schltr.


Type material

Lectotype (designated here)
INDONESIA • Sumatra, Indragiri, auf Bäumen am Danau Kotta; 9 May 1901; R. Schlechter 13307 leg.; B100277226.

_Hoya purpurascens_ Teijsm. & Binn.


Original citation

“Sumatrae prov Lampong, Teijsmann” (type material not traced).

Remarks

This name is not recorded in Tropicos (http://www.tropicos.org, accessed on 24 Jul. 2018) and IPNI (http://www.ipni.org, accessed on 24 Jul. 2018) only records it as a _nomen nudum_ (Teijsmann & Binnendijk 1866). The species was validly published by Teijsmann & Binnendijk (1863). Original material has been searched at BO, KRB, L, and U, but none has been found and it is possible that the species was described based on a live plant only.

_Hoya purpureofusca_ Hook.


Type material

Lectotype (designated here)
INDONESIA • Java; T. Lobb s.n. leg.; cultivated [Veitch Nursery?]; K000894742.

_Hoya revoluta_ Wight ex Hook.f.

_The Flora of British India_ 4: 55 (Hooker 1883).

Type material

Lectotype (designated by Forster & Liddle 1992b)
MALAYSIA • A.C. Maingay 1127 leg.; K000279860.

Epitype (designated by Rodda & Simonsson Juhonewe 2013)
MALAYSIA • Pahang, Tasek Bera, low altitude; 14 Oct. 1930; M.R. Henderson 24439 leg.; SING.
Hoya rhodostele Ridl.

*Journal of the Malayan Branch of the Royal Asiatic Society* 1: 77 (Ridley 1923).

**Type material**

**Lectotype** (designated by Turner *et al.* 2018)

INDONESIA • Sumatra, Berastagi; 8 Feb. 1921; H.N. Ridley s.n. leg.; K000894741.

**Additional type material**

INDONESIA • Sumatra, Berastagi; 13 Feb. 1921; H.N. Ridley s.n. leg.; K000894740.

Hoya rigidifolia S.Rahayu & Rodda sp. nov.

*urn:lsid:ipni.org:names:77195000-1*

Figs 1E–F, 2E–G

**Etymology**

The new species is named for its rigid and stiff leaves.

**Type material**

**Holotype**

INDONESIA • Sumatra, western Sumatra, Mentawai Islands, Pulau Siberut; 100 m a.s.l.; Aug. 2014; S. Rahayu 865 leg.; vouchered from live collection at Bogor Botanic Garden on 26 Sep. 2016 as ‘S. Hidayat B9710110’; BO.

**Description**

Epiphytic climber, with white latex in all vegetative parts. Roots adventitious below the nodes and along the internodes. Stems climbing, 3–4 mm in diameter, dull brown, sparsely pubescent; older stems grey, glabrous; internodes 4–10 cm. Leaf blades 4–12(15) × 2.5–5 cm, stiff and succulent, lanceolate to oblong, base acute, apex apiculate, mid to pale green on adaxial surface with sparse grey spots, pale green on abaxial surface with darker lines corresponding with the main vein and two prominent secondary veins, glabrous or sparsely pubescent when young, venation pinnate but with two prominent secondary veins running along the entire length of the lamina, and with a further 3–10 small secondary veins each side, primary and secondary veins depressed on adaxial surface, flat on abaxial surface; basal colleter ca 1 × 1.5 mm, one at each lamina base, broadly triangular, pale brown/cream; petioles 7–25 × 4–6 mm, terete, thicker than stems, pale brown, sparsely pubescent when young. Inflorescences 3.5–4 cm in diameter, of 20–25 flowers, sciadioidal, convex; peduncles 15–30 × ca 3 mm, terete, extra-axillary, laterally held, one at each node, producing flowers over an extended period of time, brownish, sparsely pubescent. Flowers with terete pedicels 13–17 × 0.7–1 mm, pale brownish yellow, minutely papillose. Calyx lobes ovate or round, apex rounded, 1–1.5 × 0.8–1 mm, minutely papillose outside, glabrous inside, ciliate; basal colleters 250–300 × 120–150 µm, ovoid, one at each calyx sinus. Corolla rotate, 10–12 mm in diameter when flattened; tube ca 1.5 mm long, cream inside, pale brown outside, glabrous; lobes 3.3–3.7 × 2.4–2.8 mm, ovate, valvate in bud, with incurved acute tip, cream fading to pale brown at the tip inside, brown outside, glabrous. Corona staminal, 1.2–1.4 mm high, 3.7–4.2 mm in diameter, white; lobes 2–2.3 × 1.1–1.2 mm, attached at the back of the anthers, held at a ca 80° angle, ovoid, slightly carinate above, inner process acute, erect, outer process rounded, spreading, with a basal revolute margin. Anthers ca 0.7 × 0.6 mm, ovate, including a thin apical round membranaceous appendage. Pollinia 350–400 × 130–150 µm, oblong, with a round base and an obliquely truncate apex; with a pellucid margin along the outer edge; caudicles ca 40 × 20 µm, much reduced; corpusculum 120–140 × ca 50 µm, oblong; style-head 5-angled in cross section, with five spreading lobes alternating
with the stamens, style-head apex depressed with a central conical acute tip ca 200 µm high; ovary 0.8–0.9 mm high, ca 0.35 mm in diameter at the base, conical, lightly curved, apex acute. Fruit and seed not observed.

**Distribution and habitat**

*Hoya rigidifolia* sp. nov. is only known from the type locality in the lowland forest of Pulau Siberut, southern Sumatra, Indonesia.

**Conservation status**

Known only from a single collection and lacking information on the distribution area, the population size and the possible threats to the habitat, *H. rigidifolia* sp. nov. is considered as Data Deficient (DD) (IUCN 2012).

**Notes**

*Hoya rigidifolia* sp. nov. flowers only open for a single day. The flowers of *H. finlaysonii* are also open for a single day and have a similar flower morphology (rotate corolla, ovoid corona lobes of similar size). Both species are, however, easily separated based on leaf characters. *Hoya finlaysonii* has lanceolate to oblong leaves with pinnate venation, usually darker than the rest of the lamina; *H. rigidifolia* sp. nov. also has pinnate venation, but additionally it has two basal secondary veins running along the entire length of the lamina. The leaf venation of *H. erythrina* Rintz (1978) is similar to that of *H. rigidifolia* sp. nov.; however, both species can be separated based on flower charaters: *H. erythrina* has flowers with corolla > 15 mm in diameter when flattened, long-pubescent inside, and lasting > 2 days, while *H. rigidifolia* sp. nov. has flowers with corolla < 12 mm in diameter when flattened, glabrous inside, and lasting one day.

**Hoya rintzii** Rodda, Simonsson & S.Rahayu


**Type material**

**Holotype**

MALAYSIA • Selangor, Sungai Langat; 3 Jun. 1976; R.E. Rintz RER61 leg.; KEP.

**Isotype**

MALAYSIA • Same data as for the holotype; K.

**Hoya rundumensis** (T.Green) Rodda & Simonsson


**Type material**

**Holotype**

MALAYSIA • Sabah, Rundum; 3000 ft; cultivated in USA, Oahu, Ka`a`awa, Hawaii, garden of Ted Green, vouchered on 12 Aug. 2009 as ‘T. Green 2010.001’; BISH1016412.

**Hoya sarcophylla** Ridl.

Type material

**Lectotype (designated by Turner et al. 2018)**
INDONESIA • Sumatra, Korinchi, Siolak Daras; 3000 ft; 17 Mar. 1914; H.C. Robinson & C.B. Kloss s.n. leg.; BM001190937.

*Hoya scortechinii* King & Gamble

*Journal of the Asiatic Society of Bengal* 74 (2): 567 (King & Gamble 1908).

Type material

**Lectotype (designated by Rodda 2017)**
MALAYSIA • Perak; B. Scortechini 464b leg.; K000895122.

*Hoya sigillatis* T.Green subsp. *sigillatis*

*Fraterna* 17 (3): 2 (Green 2004).

Type material

**Holotype**
MALAYSIA • Sabah, Tenom Agricultural Park; cultivated in USA, Hawaii, Oahu, Ka’a’awa, vouchered on unknown date as ‘T. Green 91024’; BISH1014783.

*Hoya solokensis* S.Rahayu & Rodda sp. nov.

urn:lsid:ipni.org:names:77195001-1

Figs 1C–D, 2C–D

Etymology

The new species is named after the collection locality in Solok, Sumatra.

Holotype

INDONESIA • Sumatra, Solok; ca 1000 m a.s.l.; 10 Oct. 2016; Fadly s.n. leg.; BO.

Description

Epiphytic shrub, with white latex in all vegetative parts. Roots only basal, no adventitious roots observed. Stems erect or spreading, 2.5–5 mm in diameter, dull green, sparsely pubescent when young; older stems grey-brown, glabrous; internodes 1–2(5) cm. Leaf blades 5–10(12) × 2.5–4 cm, thin, not succulent, chartaceous when dry, elliptic, base and apex acute or acuminate, mid green on adaxial surface, pale green on abaxial surface, glabrous, venation pinnate, midrib slightly depressed on adaxial surface, convex on abaxial surface, with 4–7 pairs of secondary veins, basal colleters absent; petioles 5–10 × 1.7–2 mm, terete channeled above, mid green, sparsely pubescent. Inflorescences sciadiodial, convex, of 3–10 flowers; peduncles 8–12 × 1.2–1.4 mm, extra-axillary, positively geotropic or horizontal, unbranched, one at each node, producing flowers only once, terete, green, sparsely pubescent just below the rachis, otherwise glabrous. Flowers with terete pedicels 5–8 × 1–1.5 mm, pale green, sparsely pubescent. Calyx lobes ovate-round, apex round, 1.4–2.2 × 1.2–1.6 mm, light green, pubescent outside, glabrous inside, ciliate; basal colleters 1.5–2.3 × 1.3–1.5 mm, 1–3 at each calyx sinus, ovoid. Corolla tube basally bulbous, tightly enveloping the lower half of the corona, with a contracted throat, a short funnel-shaped tube and free, lanceolate, spreading lobes, white; basal bulbous part 2.5–3 mm high, 3–3.5 mm in diameter; free lobes 5–6 × 2.5–3 mm, narrowly triangular, valvate in bud, with recurved edges and tip, tube pubescent inside with retrorse hairs, sparsely pubescent outside with spreading hairs,
lobes sparsely pubescent inside and outside with spreading hairs. Corona staminal 4.5–5 mm high, 2.5–3 mm in diameter, stiff and waxy-looking, white; lobes 4.5–5 × 1–1.2 mm, erect, oblong and sinuose, attached at the back of the anthers, upper apicis rounded, touching in the middle, outer tips obtuse, with a narrow revolute margin. Anthers ca 0.5 × 0.3 mm, ovate, with apical round membranaceous appendage just covering the style-head apex. Pollinia 470–520 × 200–240 μm, oblong, with a round base and apex; pellucid margin missing; caudicles ca 130 × 70 μm, ovoid, almost transparent; corpusculum 300–320 × 160–180 μm, ovoid; style-head 5-angled in cross section, with five spreading lobes alternating with the stamens, style-head apex conical, 1–1.2 mm high, 0.9–1.1 mm in diameter at the base, apex acute; ovary 1.5–1.7 mm high, conical, with apex acute. Fruit and seed not observed.

Distribution and habitat

_Hoya solokensis_ sp. nov. is only known from the type locality in Solok, Sumatra, Indonesia, at ca 1000 m a.s.l. It was collected in an evergreen forest, where it was growing epiphytically.

Conservation status

Known only from a single collection and lacking information on the distribution area, the population size and the possible threats to the habitat, _H. solokensis_ sp. nov. is considered as Data Deficient (DD) (IUCN 2012).

Notes

_Hoya solokensis_ sp. nov. is one of the few species of _Hoya_ that exhibits a non-climbing habit but is instead an epiphytic shrub. It is morphologically similar to _H. papaschonii_ Rodda (Rodda & Ercole 2014), a species only found in southern Thailand. Both species share a shrubby habit, short-lived peduncles, and flowers with a tubular corolla. However, _H. papaschonii_ has the free part of the corolla lobes mostly held upright, while in _H. solokensis_ sp. nov. the lobes are spreading; furthermore, the corona of _H. papaschonii_ has both staminal and interstaminal elements while _H. solokensis_ sp. nov. only has a staminal corona. Another species with a tubular corolla is _H. telosmoides_ Omlor (1996) from Borneo, that is, however, a climber. The flowers of _H. solokensis_ sp. nov. superficially resemble those of the Bornean _H. hamiltoniorum_ A.L.Lamb, Gavrus, Emoi & Gokusing (Lamb et al. 2014) because both species have the free part of the corolla lobes spreading, however _H. hamiltoniorum_ is a climber and its inner apex of the corona lobe is bifid, while the apex of the inner lobes of _H. solokensis_ sp. nov. is entire.

_Hoya sumatrana_ S.Rahayu & Rodda sp. nov.

*urn:lsid:ipni.org:names:77195002-1*  
*Figs 3–4*

Etymology

The new species is named after the Indonesian island of Sumatra.

Type material

**Holotype**

INDONESIA • Sumatra, Lampung, Taman Nasional Bukit Barisan Selatan, Tambling; 20 Sep. 2013; S. Rahayu 861 leg.; lowland forests; BO.

**Isotype**

INDONESIA • Same data as for the holotype; SING.
Fig. 3. *Hoya sumatrana* S. Rahayu & Rodda sp. nov. A. Buds. B. Inflorescence, from underneath. C. Flower, from top. D. Corolla, from underneath, calyx and pedicel. E. Flower, side view. F. Corona, from underneath. G. Pedicel, calyx and ovaries. H. Pollinarium. Photos: M. Rodda.
Description

Epiphytic climber, with white or yellowish latex in all vegetative parts. Roots adventitious below the nodes and along the internodes. Stems 2–4 mm in diameter, climbing, dull green, pubescent; older stems grey, glabrescent; internodes 2–5(10) cm. Leaf blades 3–7(15) × 3.5–5.5 cm, stiff and succulent, oblong, ovate or elliptic, base round to attenuate, apex acute, mid green on adaxial surface with sparse grey spots, pale green on abaxial surface, glabrous, or very sparsely pubescent when young, venation pinnate, inconspicuous, basal colleters ca 1 × 1.5 mm, one at each lamina base, broadly triangular, pale brown; petioles 10–20 × 3–6 mm, terete, dark brown, sparsely pubescent when young. Inflorescences 2.5–3 cm in diameter, of 10–15 flowers, sciadioidal, flat; peduncles 15–35 × 1.5–2 mm, extra-axillary, positively geotropic, 1 at each node, producing flowers over an extended period of time, terete, dark red, sparsely pubescent. Flowers with terete pedicels 5–15 × 0.7–1 mm, dark red at the base, fading to pale pink towards the calyx, sparsely papillose. Calyx lobes narrowly triangular, spaced 0.6–0.8 mm apart, apex acute or rounded, 1.4–2 × 0.5–0.8 mm, reddish, papillose outside, inside glabrous, sparsely ciliate; basal colleters 0.16–0.18 × 0.09–0.11 mm, one at each calyx sinus, ovoid. Corolla 7–9 mm in diameter when flattened, rotate; tube ca 1.5 mm long, cream, glabrous outside, densely pubescent inside; lobes triangular, valvate in bud, with recurved edges and revolute tip, 5–6 × 2–3 mm, glabrous outside, densely pubescent inside with a glabrous tip ca 1.5 mm long. Corona staminal 2–2.5 mm high, 2.8–3.2 mm in diameter, red; lobes ca 2.2 × 0.8 mm, attached at the back of the anthers, held at ca 60° angle, ovoid, slightly carinate.

Fig. 4. *Hoya sumatrana* S.Rahayu & Rodda sp. nov. A–B. Leaves from above. C–D. Leaves from underneath. Photos: M. Rodda.
above, inner process bilobed, outer process rounded, with a narrow basal revolute margin. Anthers ca 0.5 × 0.4 mm, ovate, with a linear apical round membranaceous appendage to 2.8 mm long. Pollinia 280–320 × 100–120 μm, oblong, with a round base and obliquely truncate; pellucid margin all along the outer edge; caudicles 100–120 × 70 μm, broad, almost transparent; corpusculum 90–110 × 40–60 μm, oblong; style-head 5-angled in cross section, with five spreading lobes alternating with the stamens, style-head apex 0.8–0.9 mm long, 0.4–0.5 mm broad at the base, conical, with apex acute; ovary 1.5–2 × ca 0.5 mm at the base, conical, with apex acute. Fruit and seed not observed.

Distribution and habitat

Hoya sumatrana sp. nov. is only known from the type locality in in Lampung, Sumatra, Indonesia. It was collected in a coastal swamp forest, where it was growing as an epiphyte.

Conservation status

Known only from a single collection and lacking information on the distribution area, the population size and the possible threats to the habitat, H. sumatrana sp. nov. is considered as Data Deficient (DD) (IUCN 2012).

Notes

Hoya sumatrana sp. nov. is a new species in H. sect. Peltostemma Schlechter (1916: 14), characterized by upright corona lobes, long linear anther appendages extending well above the style-head and pollinaria with well developed caudicle wings. This section includes six species, two of which, H.oidaensis Kidyo (2013) and H. phuwuaensis Kidyo (2016), have been recently published. Hoya sumatrana sp. nov. can be separated from all other members of this section because its flowers are much smaller; for example, the corolla of H. sumatrana sp. nov. is 7–9 mm in diameter, while the corolla of the second smallest species, H. flagellata Kerr (1940: tab. 3407), is > 10 mm in diameter, as well as the corona of Hoya sumatrana sp. nov. is 2.8–3.2 mm in diameter, while that of H. flagellata is > 4 mm in diameter. Another useful character to separate H. sumatrana sp. nov. from all other members of the section is the inner corona lobe process, that is bilobed in H. sumatrana sp. nov., while the other species have acute or rounded processes.

Hoya uncinata Teijsm. & Binn.

Natuurkundig Tijdschrift voor Nederlandsch Indië 25: 408 (Teijsmann & Binnendijk 1863).

Synonym


Original citation

“In silvis Javae et Sumatrae ins. prov. Palembang” (type material not traced).

Type material

Neotype (designated by Rodda & Rahayu 2018)
INDONESIA • Sumatra, “auf Bäumen bei Padang”; 900 m a.s.l.; 20 Jan. 1907; R. Schlechter 15916 leg.; B100277224.
**Hoya verticillata** (Vahl) G.Don


**Type material**

**Lectotype** (designated by Veldkamp *et al*. 1995)

**Possible isolectotype**
INDIA • “Hb. Vahlii. *Sperlingia tetraphylla* *Cynanchum*? Floer ex Ind. Orient.”; C10006736.

**Hoya vitellinoides** Bakh.f.

*Blumea* 6: 381 (Bakhuizen van den Brink 1950).

**Type material**

**Holotype**
INDONESIA • Java, Gunung Tjipoei bij Tjampea; 800 m a.s.l.; 24 Sep. 1920; Bakhuizen van den Brink 4181 leg.; L0004347.

**Hoya vitellina** Blume

*Museum Botanicum Lugduno-Batavum* 1: 45 (Blume 1849a).

**Type material**

**Lectotype** (designated by Rodda 2017)
INDONESIA • West Java; C. L. Blume (?) s.n. leg.; L0004346.

**Possible isolectotypes**
INDONESIA • Same data as for the lectotype; BO1869758, BO1869758, U1102651.

**Hoya wrayi** King & Gamble

*Journal of the Asiatic Society of Bengal* 74 (2): 579 (King & Gamble 1908).

**Type material**

**Lectotype** (designated by Rodda & Simonsson Juhonewe 2012)
MALAYSIA • Perak, Gunong Batu Pateh; 4300 ft; Wray 371 leg.; K.

**Epitype** (designated by Rodda & Simonsson Juhonewe 2012)
MALAYSIA • Pahang, Fraser Hill; Feb. 1976; R.E. Rintz RER23 leg.; K (spirit material).

**Isoepitype**
MALAYSIA • Same data as for the epitype; K (pressed material).
Discussion

Since Rahayu & Wanntorp (2012), the Sumatran specimens identified as *H. erythrostemma* Kerr (1939) have been identified as *H. rintzii*, *H. micrantha* Hook.f. (Hooker 1883) has been re-determined as *H. rundumensis*, and *H. verticillata* was reported as *H. parasitica* Wall. ex Wight (1834). Nine species have been added to the inventory of Sumatran *Hoya* (Rahayu & Wanntorp 2012), all described based on Sumatran collections. These are *H. andalensis*, *H. beccarii*, *H. brooksii*, *H. deykeae*, *H. omlorii*, *H. parvifolia*, *H. purpurascens*, *H. sarcophylla*, and *H. uncinata*.

*Hoya variifolia* is considered a new synonym of *H. parviflora*. Two further species, *H. glabra* Schlr (Schlechter 1908) and *H. kastbergii*, are newly recorded.

The total count of taxa of *Hoya* known from Sumatra now stands at 43 and includes 41 species and two subspecies.

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