Hoya fauziana ssp. angulata (Apocynaceae, Asclepiadoideae),
a new subspecies from Borneo and Sumatra

M. Rodda¹, A.L. Lamb², L. Gokusing³, S. Rahayu⁴

Key words
Asclepiadoideae
epiphyte
Hill Dipterocarp Forest
Indonesia
Kalabakan
Kalimantan
Malaysia
Sabah
Southeast Asia

Abstract
A new Hoya subspecies from Borneo and Sumatra, Hoya fauziana ssp. angulata is described and illustrated. Both subspecies of Hoya fauziana have long lanceolate leaves, pubescent corollas and prominent ovoid corona lobes. They can be separated by the orientation of the pedicels (straight in H. fauziana ssp. fauziana and angled in H. fauziana ssp. angulata) and the type and position of pubescence of the corolla (tube and lobes pubescent with evident sericeous hairs in H. fauziana ssp. fauziana vs only tube finely pubescent in H. fauziana ssp. angulata).

INTRODUCTION

Hoya R.Br. (Apocynaceae, Asclepiadoideae, Marsdenieae) is a large genus of 350–450 mostly epiphytic climbers (Rodda 2015) with Indomalayan–Australasian distribution, with a few species extending all the way to southern India/Sri Lanka, the Himalayan foothills, southern China and Japan (Forster et al. 1998). The island of Borneo is particularly species rich. In recent years numerous papers on Bornean Hoya have been published (Lamb & Rodda 2016, Rahayu & Rodda 2017, Rodda 2017) bringing the count of species to 73. For the island of Sumatra Rahayu & Wanntorp (2012) published a checklist and a key including 27 Hoya species.

Lamb et al. (2014) described eight new taxa based on live materials from Sabah that bloomed in cultivation at Kipandi Park (Kampung Kipandi, Moyog, Sabah). More collections have since been made by the authors and one accession collected by LG in Mixed Hill Dipterocarp Forest in the Kalabakan area of Sabah has been identified as a new taxon. It was also collected in Sumatra (Riau) in 2004 by SR, and in West Kalimantan (Sanggau) in 2016 by Maskuran. The new subspecies, Hoya fauziana ssp. angulata Rodda, A.L.Lamb, Gokusing & S.Rahayu is here described and illustrated.

Hoya fauziana ssp. angulata Rodda, A.L.Lamb, Gokusing & S.Rahayu, subsp. nov. — Fig. 1, 2

Distinguished from H. fauziana ssp. fauziana by the orientation of the flowers, all facing the same direction (vs perpendicular to the pedicel axis in H. fauziana ssp. fauziana) and by the fine pubescence of the corolla tube (vs long sericeous trichomes on the corolla tube and lobe in H. fauziana ssp. fauziana). — Type: L. Gokusing LG56/2017 (holo SAN), Malaysia, Sabah, Tawau, Kalabakan area, Mixed Hill Dipterocarp Forest, 16 May 2017.

Etymology. The specific epithet 'angulata' refers to the orientation of the flowers, held at an angle of 90–180° to the pedicels.

Epiphytic climber with white latex in all vegetative parts, glabrous. Stems slender, to c. 1.5 m long, internodes 10–20(–30) cm by 1.5–3 mm, brown; root adventitious sparsely produced along the stem. Leaves petiolate; petiolo terete, 2–6 by 1–2 mm diam, dark green to maroon; lamina lanceolate, 8–16 by 2–5 cm, base cuneate to obtuse, apex acuminate; venation pinate, secondary veins hardly visible in live material, 5–12 pairs, diverging at 45–60° from the main vein, anastomosing near lamina edge, tertiary venation reticulate; dark green above with numerous grey spots, below lighter green. Colleters at lamina base 2, ovoid, 500–700 by 350–450 µm. Inflorescences positive geotropic, pseudo-umbellate, convex, 8–10(–20)-flowered; peduncle 9–10 cm long by c. 1.5 mm diam, glabrous. Pedicel 2.5–3 cm by 0.7–0.8 mm diam, reddish-maroon, very finely papilllose, sharply angled just below the calyx. Calyx 3.5–4 mm diam, lobes ovate, spatulate, 1.5–2 by 0.7–1 mm wide, apex round, inside glabrous, outside very sparsely pubescent; basal colleters one in each calyx lobe sinus, ovate with a round tip, 0.23–0.35 mm long. Corolla reflexed, tubular shaped, c. 13 mm diam, 18–20 mm when flattened; tube 3–4 mm long, finely pubescent inside, trichomes 130–170 µm long, glabrous outside, corolla lobes revolute, broadly ovate, 5–7 by 6–7 mm, dark orange-red, glabrous, apex acute. Corona staminal, violet red, 8–10 mm diam, 3–4 mm high; corona lobes ovoid, 4–5 by c. 2.5 mm,ridged above, below sulcate with revolute margins, outer process round raised, inner process oblong, covering anther appendages. Anthers triangular, 1 by 1 mm, with apical round membranaceous appendage exceeding the style-head apex. Pollinia oblong, 700–750 by 230–270 µm, narrowing towards the base, apex obliquely truncate, sterile edge continuous along the outer side of each pollinium; corpusculum rhomboid, 400–450 by 200–250 µm; caudicles curved, hyaline, 150–200 by 80–100 µm at the widest. Style-head 5-angled in cross section, with 5 lobes alternating with the stamens, style-head apex flat to slightly convex, c. 2 mm broad. Ovaries oblong with a round tip, 1.4–1.7 by 1–2 mm wide at the base, glabrous. Fruit and seed not seen.

¹ The Herbarium, Singapore Botanic Gardens, National Parks Board, 1 Cluny Road, 259569 Singapore; corresponding author e-mail: rodda.michele@gmail.com.
² P.O. Box 10960, 88810 Kota Kinabalu, Sabah, Malaysia.
³ Kipandi Park, P.O. Box 12785, 88831 Kota Kinabalu, Sabah, Malaysia.
⁴ Bogor Botanic Gardens, Indonesian Institute of Sciences, Bogor, Indonesia.

© 2018 Naturalis Biodiversity Center
You are free to share - to copy, distribute and transmit the work, under the following conditions:
Attribution. You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).
Non-commercial. You may not use this work for commercial purposes.
No derivative works. You may not alter, transform, or build upon this work.
For any reuse or distribution, you must make clear to others the license terms of this work, which can be found at http://creativecommons.org/licenses/by-nc-nd/3.0/legalcode. Any of the above conditions can be waived if you get permission from the copyright holder. Nothing in this license impairs or restricts the author’s moral rights.
Distribution & Ecology — *Hoya fauziana* ssp. *angulata* has been collected in one locality in Sumatra, Riau, Bukit Tiga Pulu area (*Maskuran s.n. (BO)*) and in two localities in Borneo, Sabah, Malaysia, Kalabakan area (*Gokusing LG56/2017 (SAN)*) and Kalimantan, Sanggau, Jangkang area (*Maskuran s.n. (BO)*). In Sumatra as well as Sabah the species was collected in Mixed Hill Dipterocarp Forest, while in Kalimantan it was found in lowland mixed Dipterocarp and Heath Forest. All plants observed were epiphytic climbers.

Conservation status — Data Deficient (DD, IUCN Standards and Petitions Subcommittee 2017). Using GeoCAT (Bachman et al. 2011) we calculated the EOO for *H. fauziana* ssp. *angulata* to be > 145,000 km² and the AOO > 12,000 km². The taxon should therefore be assessed as Least Concern. Only three populations are known and therefore it might belong to a threatened category. Only one collection is within a conservation area (Sumatra, Bukit Tiga Pulu) while the other two localities are not within conservation areas and may in the future be converted to agriculture. However, we do not have information on the population size, number of mature individuals and habitat loss to make an accurate conservation assessment and therefore assess *H. fauziana* ssp. *angulata* as Data Deficient. 

*Ex situ* collections are present at Kipandi Park and at Bogor Botanic Garden (Acc No. BBG- B 200409390).
Specimens examined.

Hoya fauziana ssp. fauziana: Malaysia, Sabah, Tenom District, Ulu Tomani, 1200 m, cultivated at Kipandi Park, 30 Oct. 2013, A. Lamb 2462/2013 (SAN, SING).


Notes — The new taxon is here classified as a subspecies of Hoya fauziana (Rodda et al. 2015) because they both have long lanceolate leaves, and their corolla and corona are of very similar shape. The more striking difference between the two taxa that warrants the separation of a new subspecies lies in the orientation of the flowers that are held perpendicular at 90° to the pedicels in H. fauziana ssp. fauziana but face the same direction in H. fauziana ssp. angulata at angles of 90–180° to the pedicel. The species also differ in type and placement of the pubescence on the corolla: H. fauziana ssp. fauziana has sericeous hairs 250–350 µm long that are sparse on the inside of the corolla tube and dense on the inside of the corolla lobes while H. fauziana ssp. angulata has thin hairs 130–170 µm long only present on the inside of the corolla tube. Lastly the pollinium and corpusculum are larger in H. fauziana ssp. angulata (pollinium: 700–750 by 230–270 µm, corpusculum: 400–450 by 200–250 µm) compared to H. fauziana ssp. fauziana (pollinium: 650–700 by 300–350 µm, corpusculum: 350–400 by 200–220 µm).

Acknowledgements This study is part of an ongoing research project on the systematics of Hoya. This research received support from the National Parks Board (Singapore) that sponsored field expeditions to Borneo and herbarium visits in Asia and Europe. The visit to Riau (Sumatra) was supported by Bogor Botanic Gardens – LIPI’s Flora expedition, while the sample from West Kalimantan was provided by Mr. Maskuran. We would like to thank the curators of BM, BO, BRUN, FI, K, KEP, L, LAE, P, SAN, SAR, SNP, and SING herbaria for allowing access and/or for providing high quality images of herbarium specimens, Xiang Yun Loh for preparing the line drawing, Steven Bosuang for providing pictures of the live plant and two anonymous reviewers for their valuable comments on the manuscript.

REFERENCES


