

Michele RODDA^a, Dipankar BORAH^{b,c,*} and Momang TARAM^b: **The New Circumscription of *Hoya oreogena* (*Apocynaceae*–*Asclepiadoideae*) with the First Record for the Indian Flora**

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Summary: *Hoya oreogena* Kerr (*Apocynaceae*), so far known from Thailand and Myanmar, is reported for the first time from India. Synonymization of *H. salweenica* Tsiang & P.T.Li and *H. revolubilis* Tsiang & P.T.Li has also been made. Its distribution extends to China.

The genus *Hoya* R.Br. (*Apocyanaceae*) includes about 350–450 species of tropical and subtropical generally epiphytic climbers found throughout tropical Asia, tropical Pacific islands and NE Australia (Rodda 2015). In India the genus is represented by a total of 36 species (Khuraijam et al. 2018).

During recent fieldwork in the state of Arunachal Pradesh, India, the authors came across an interesting specimen of *Hoya*. After examination of the relevant literature (Li et al. 1995, Jagtap and Singh 1999, Khuraijam et al. 2018) and herbarium specimens deposited in various herbaria (ASSAM, ARUN, BK, BKF, BM, CAL, E, HITBC, IBSC, K, KUN, PE, QBG, SING), it was identified as *Hoya oreogena* Kerr, confirming the presence of the taxon in India. The species was so far known from Thailand and Myanmar (Thaithong et al. 2018, Rodda et al. 2019), China (as *Hoya salweenica* Tsiang & P.T.Li; Li et al. 1995, He et al. 2009) and Vietnam (as *Hoya revolubilis* Tsiang & P.T.Li; Averyanov et al. 2017). We here formally publish the new record for the Flora of India and provide a photographic illustration of the taxon.

Hoya oreogena Kerr in Bull. Misc. Inform. Kew **8**: 461 (1939). **Lectotype** (designated by Rodda et al. 2019): THAILAND. Kao Luang, Prachuap, ca. 1200 m 5 July 1926, A.F.G. Kerr 10857 (BM001014254; BK257733–isolectotype).

Hoya salweenica Tsiang & P.T.Li in Acta Phytotax. Sin. **12**: 125 (1974), **syn. nov.** **Type:** CHINA. Yunnan Province. Salwin Valley, Sekai, 20 September 1938, Tse-tsun Yü 23006 (IBSC–holotype; A00076424, E00275181–isotypes).

Hoya revolubilis Tsiang & P.T.Li in Acta Phytotax. Sin. **12**: 123 (1974), **syn. nov.**; Li & al., Fl. China **16**: 231 (1995); Averyanov & al. in Turczaninowia **20**(3): 136 (2017). **Type:** CHINA. Yunnan Province. August 1912, G.Forrest 9108 (A00076423–holotype; E00275182, IBSC0005697–isotypes).

Description: epiphytic or occasionally lithophytic climber, with translucent latex in all parts. Stems stout, climbing or dangling, to 5 m long; branches 2.5–5 mm diam, pubescent turning glabrescent when old. Leaves: petiole (0.5–)1–1.5 cm long; lamina elliptic, oblong to oblanceolate, 5–20 × (2–)3.5–6 cm, very thick and succulent when fresh, coriaceous when dry, base rounded to cuneate, with basal colleters, apex acute, obtuse or rounded, abaxially pubescent to glabrescent; lateral veins 5–8 on each side of main vein, barely visible. Inflorescence pseudo umbelliform to –30-flowered. Peduncle extra-axillary, 0.5–

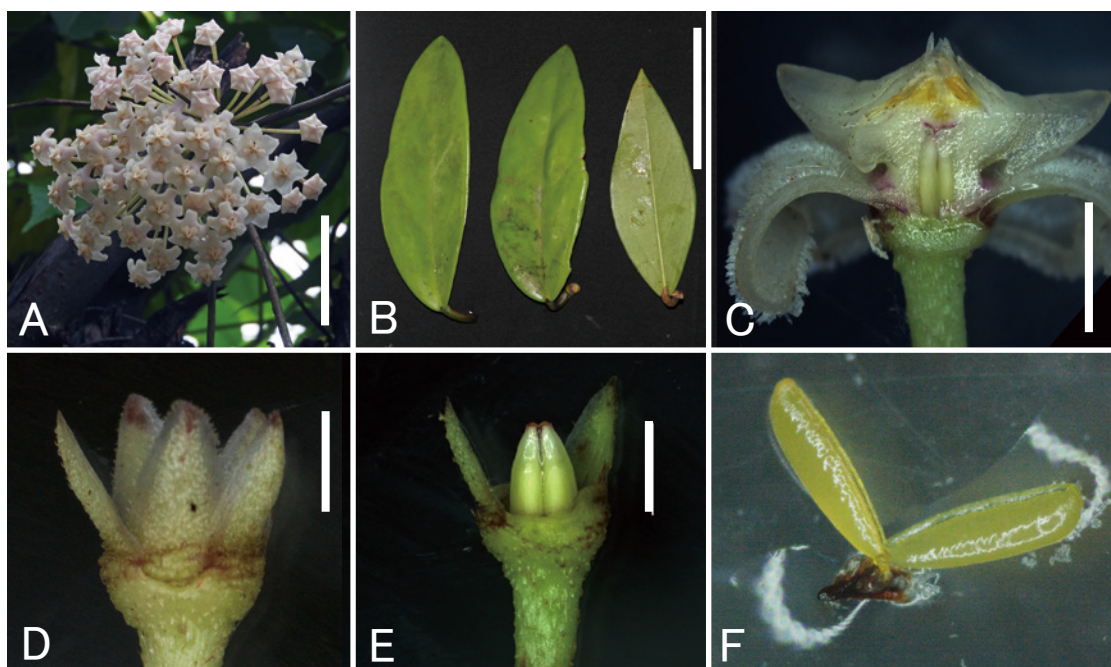


Fig. 1. *Hoya oreogena*. A. Inflorescence. B. Leaves. C. Longitudinal section of flower showing corona. D. Calyx lobes. E. Ovary. F. Pollinarium. Photographs by Momang Taram and Dipankar Borah. Based on D. Borah & M. Taram 9067 (HAU). Scale bars: 5 cm (A), 10 cm (B), 5 mm (C), 1 mm (D), 2 mm (E).

cm long, pubescent to glabrescent. Pedicel filiform, 2–4 cm long. Calyx lobes triangular-ovate 2–3 × 1–1.6 mm. Corolla rotate, white to very pale pink, 1.2–1.6 cm in diam., glabrous outside, pubescent inside; tube 5–6 mm long, lobes triangular, 4–6 × 4–6.6 mm, apex acute, margin revolute. Corona star shaped, 6–10 mm diam, lobes spreading, ovate, 3.5–5 × 1–2 mm, outer process acute, spreading, inner process acuminate, erect. Ovaries glabrous. Follicle (based on Thaithong et al. 2018) linear-lanceolate, 11–13 × 0.7–1 cm, seeds lanceolate, 4–6 × ca. 1 mm, with coma 2–3 cm long.

Specimen examined: **INDIA**. Arunachal Pradesh, East Siang, 12 June 2019, M.Taram 2038 (HAU 4097); Papum Pare, 31 July 2018, D.Borah & M.Taram 9067 (HAU 4055). **CHINA**. Yunnan, between Kambaiti and Tengyueh, November 1922, J.F.Rock 7706 (IBSC0520598, IBSC0005698). **MYANMAR**. Shan State, Taunggyi Township, Lomkok mountain and pagoda, c. 1106 m, 20°49'2.4"N, 91°13'26.6"E, 20 Sep 2015, C.Puglisi & al. 103549 (MBK, RAF, SING0249991). **THAILAND**. Loei, Haeo District, Na, Na Haeo National Park, Phu San

Sai, 16 March 2006, C.Maknoi 756 (QBG); Phitsanulok, Nakhon Thai, Phu Hin Rong Kla National Park, Lan Hin Taek, 9 June 1999, P.Suksathan 1746 (QBG); Loei, Phu Kradueng, Phu Kradueng National Park, 4 September 1967, T.Shimizu, M.Hutoh & D.Chaiglom T-8865 (QBG), Loei, Phu Kradueng, Phu Kradueng National Park, to Doi Mon, 6 September 1988, H.Takahashi T-63398 (QBG).

Flowering: June to July (in India), May to October (in Thailand); September to December (in China).

Distribution: China (Yunnan), India (Arunachal Pradesh), Myanmar, Thailand and Vietnam.

Habitat and ecology: *Hoya oreogena* is found growing as an element of moist tropical forests in Arunachal Pradesh at elevations of 120 m to 1600 m a.s.l. It grows as an epiphyte in association with *Aeschynanthus micranthus*, *Nerphrolepis cordifolia* and *Pyrrosia* sp., on the moist tree trunks of *Samanea saman*, *Elaeocarpus angustifolius*, etc. It is generally found in forests, but is also seen on tree trunks within human inhabited areas. The population

observed and vouchered includes more than 1000 individuals.

Notes: *Hoya oreogena* is one of the few species in the genus with translucent latex, including the type of the genus *H. carnosa* (L.f.) R.Br. (Averyanov et al. 2017). The name has so far been applied to collections from Thailand and Myanmar (Thaithong et al. 2018, Rodda et al. 2019) but the examination of literature and specimens brought us to also consider the Chinese *Hoya salweenica* and *H. revolubilis* conspecific with *H. oreogena*. The characters used in the separation of *H. salweenica* and *H. revolubilis* are the pubescent leaves with revolute leaf margins (when dry) and cuneate lamina base (for *H. revolubilis*) and the glabrous leaves with flat lamina margins and round or obtuse lamina base (for *H. salweenica*). When they were published neither *H. revolubilis* or *H. salweenica* were compared with *H. oreogena*. Based on Thaithong et al. (2018) and our own observations, *Hoya oreogena* is a vegetatively variable taxon with elliptic to oblanceolate lamina with acute to rounded base and lamina that can be very pubescent when immature turning glabrescent when older. The flowers are instead more morphologically stable: the calyx has deltate lobes pubescent outside; the corolla is rotate, white or pale pink, pubescent inside, with recurved apices at anthesis; the corona is yellowish white often with a pale pink centre; the corona lobes are spreading rhomboid-ovate, with inner apices distinctly higher than the outer apices. Based on these observations we conclude that *H. revolubilis* and *H. salweenica* should be treated as synonyms of *H. oreogena*.

Hoya oreogena is most similar to *H. carnosa*, widespread and variable species that however has leaves with often darker secondary venation on the upper surface. The secondary venation in *H. oreogena* is inconspicuous and when barely visible never darker than the rest of the lamina. Further, *H. oreogena* has thicker leaves, generally

> 5 mm, while *H. carnosa* has leaves < 3 mm thick. The flowers of *H. carnosa* generally have a much darker purple centre of the corona, and the inner apices of the corona lobes are only slightly higher than the outer apices, while *H. oreogena* has paler cream or pink centre of the corona, with inner apices of the corona lobes > 1.5 mm higher than the outer apices.

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M.Rodda^a, D.Borah^b, M.Taram^b: インド新産の *Hoya oreogen* (キョウチクトウ科) の新範囲

キョウチクトウ科サクララン属は着生の藤本で、熱帯アジア、太平洋諸島、オーストラリア北東部に約350–450種が知られて、インドには36種が報告されている。*Hoya oreogena* Kerr はこれまでタイとミャンマーでのみ知られていたが、最近になって、インドのアルナチャル・プラデシュ州から発見された。分類学的検討の結果、中国雲南省から記載された *H. revolubilis* Tsiang & P.T.Li と

H. salweenica Tsiang & P.T.Li も本種に含まれることが明らかになった。その結果、*H. oreogena* はインドからミャンマー、タイ、ベトナムを経て中国まで分布することになる。

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