



Marsdenia burmanica (Apocynaceae, Asclepiadoideae), a new species from Kachin, Myanmar

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ABSTRACT: *Marsdenia burmanica* Wen B.Xu & J.Y.Shen (Apocynaceae), a new species from Hongga Mountain, Putao County, Kachin State, Myanmar, is described and illustrated. It is similar to *M. hainanensis*, *M. sinensis*, and *M. tenii*, but differs from them by campanulate flowers, fusiform gynostegium exerted from the corolla tube, 2-cleft stigma head, purple corolla and a corona of 2 oval protrusions at the base of the corona. Photographs, line drawing, distribution, comparison with related species, and a conservation assessment are provided for this rarely observed species.

KEY WORDS: Apocynaceae, Kachin, *Marsdenia hainanensis*, *M. sinensis*, *M. tenia*, Myanmar.

INTRODUCTION

Marsdenia R. Brown was established in 1810. The genus generally consists of lianas with umbel-like, paniculate, or racemelike inflorescences, corolla urceolate or campanulate, corona lobes 5, erect, acuminate, fleshy, attached to gynostegium; anthers erect, appendages often inserted at base of corona; pollinia 2 per pollinarium, erect. (Endress *et al.*, 2018; Tsiang and Li, 1977; Li *et al.*, 1995). It contains about 100 species, mainly distributed in Asia, America and tropical Africa (Hooker, 1885; Tsiang and Li, 1977; Li *et al.*, 1995; Stevens, 2009). Although the suggestions were made that some species of *Dregea* E. Meyer, *Gymnema* R. Brown, *Dischidanthus* Tsiang and *Jasminanthes* Blume should be included in the genus *Marsdenia* (Forster 1995a, 1995b), it is not consistent with morphological and molecular research, mainly phylogenetic-based results (Endress and Bruyns, 2000; Endress *et al.*, 2014). Recently, the generic circumscriptions has been revised again, reducing *Marsdenia* s.str. to a small clade of Asian species, based on a densely sampled molecular phylogeny of the pantropical, predominantly forest-dwelling tribe Marsdenieae (Apocynaceae), including almost a quarter of the ca. 740 species (Liede-Schumann *et al.*, 2022).

In recent years, several new species of *Marsdenia* were discovered (Yoganarasimhan and Subramanyam, 1976; Li and Li, 1982; Zhao and Wang, 1991; Acevedo-Rodríguez, 1999; Juárez-Jaimes and Stevens, 1999; Juárez-Jaimes and Saynes 2008; Juárez-Jaimes, 2008; Juárez-Jaimes and Alvarado-Cárdenas, 2010; Rapini and Pereira, 2011; Fernando and Rodda, 2013; Juárez-Jaimes, 2015; Juárez-Jaimes and Lozada-Pérez, 2015; Carnevali *et al.*, 2016; Stevens *et al.*, 2016; Meve *et al.*, 2018; Santo *et al.*, 2018; Espírito *et al.*, 2018; Liu *et al.*, 2019).

In October 2021, the authors saw a *Marsdenia* plant

(introduced from Putao County, northern Myanmar) cultivated in the Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences which was in bloom. The flowers of this species have a fusiform stylar head and 2 oval protrusions at the base of the corona. This species is similar to *M. hainanensis* Tsiang, *M. sinensis* Hemsl., and *M. tenii* M.G.Gilbert & P.T.Li. After a literature review as well as comprehensive morphological character analysis, we finally confirmed that the species is new to science and thus describe and illustrate it here.

MATERIALS AND METHODS

Morphological observation and description of the new species based on living plants cultivated in the Xishuangbanna Tropical Botanical Garden and dry specimens preserved in HIB and HITBC. Micromorphology of flowers and leaves indumentum were observed by using a Jiangnan JSZ6 stereo microscope (Jiangnan, Nanjing, China). All morphological characters for the species against this new taxon refer to descriptions of them in the Flora of China (Li *et al.*, 1995) and Flora Reipublicae Popularis Sinicae (Tsiang and Li, 1977).

TAXONOMIC TREATMENT

Marsdenia burmanica Wen B.Xu & J.Y.Shen, *sp. nov.*

Figs. 1, 2 & Tab. 1

Type: MYANMAR, Kachin State, Putao County, Hongga Mountain, sunny hillside, alt. 950 m., voucher from a cultivated plant at the Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, 12 Oct. 2021, Xu & Shen 210126 (holotype: HIB!, isotype: HITBC!).

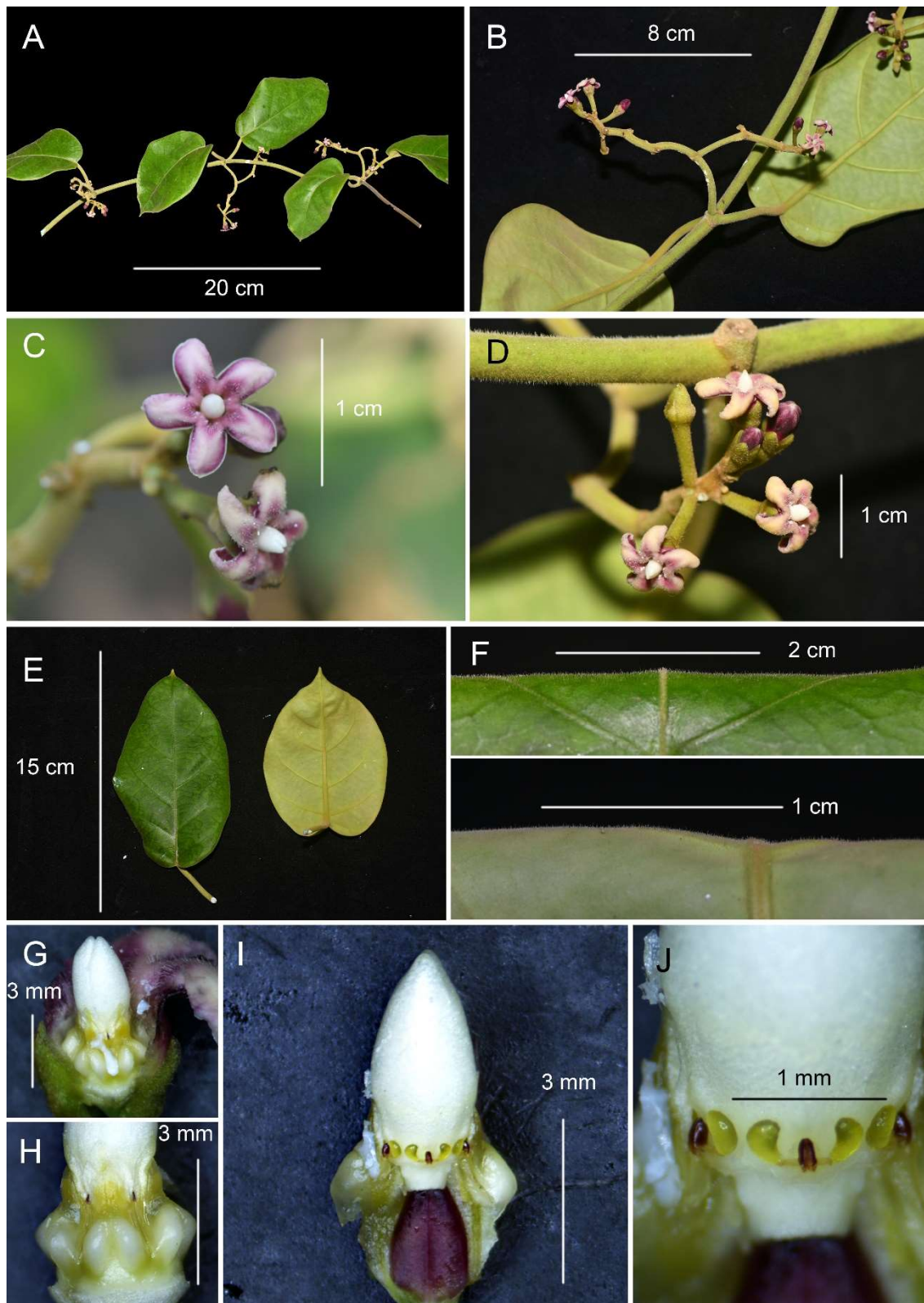


Fig. 1. *Marsdenia burmanica* Wen B.Xu & J.Y.Shen. **A.** Twig showing leaf orientation and position of inflorescences. **B.** Inflorescence in lateral view. **C.** Flower in ventral view. **D.** Inflorescence in ventral view. **E.** Leaves showing abaxial (right) and adaxial (left) surface. **F.** Leaves adaxial (above) and abaxial (below) surface indumentum. **G.** Gynostegium in ventral view, showing 2-cleft stigma head. **H.** Corona lobes, showing 2 oval protrusions in lateral view at base of gynostegium. **I.** Gynostegium in lateral view; showing oval-conical form. **J.** Pollinarium. Photos by Jian-Yong Shen.

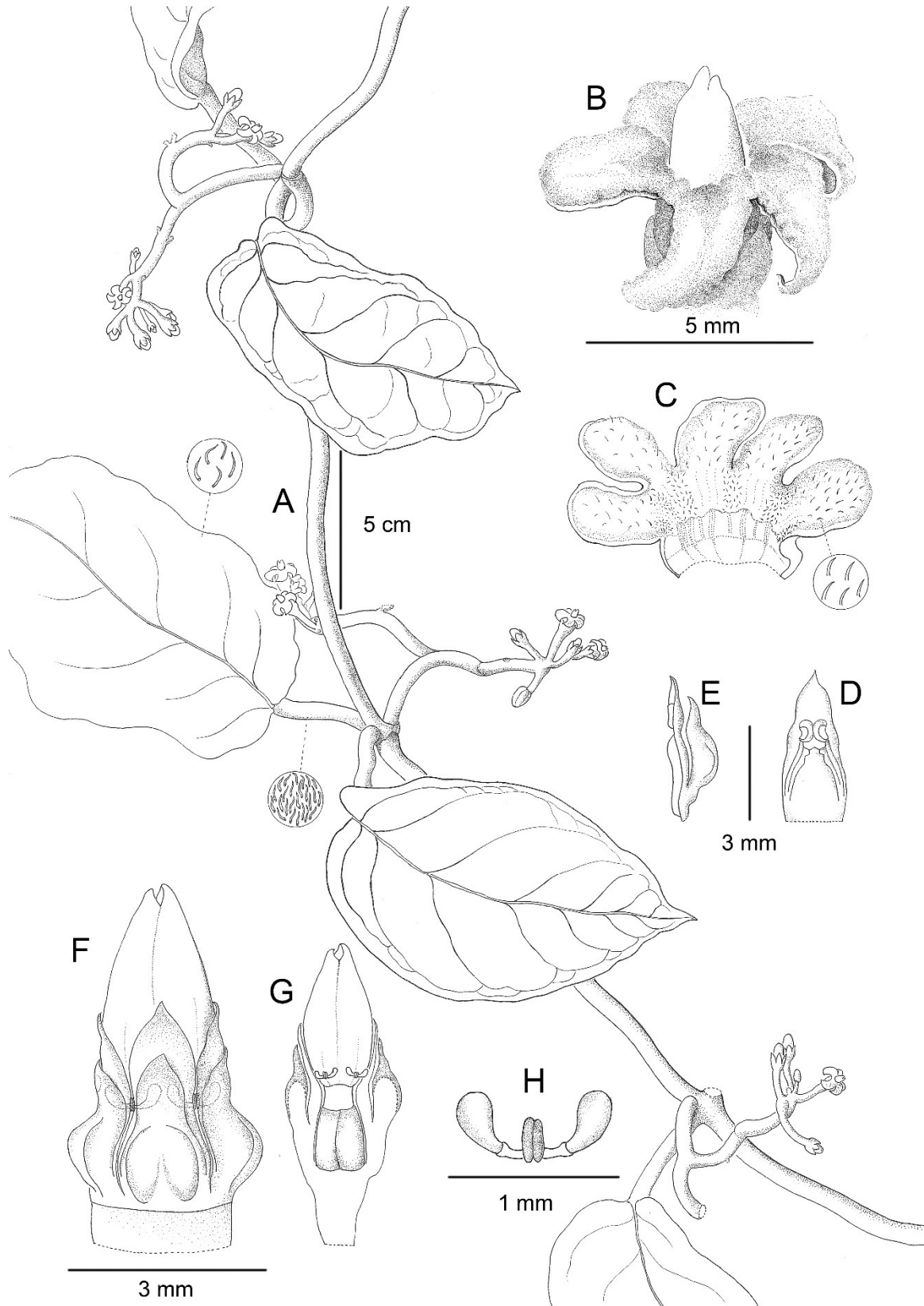


Fig. 2. *Marsdenia burmanica* Wen B.Xu & J.Y.Shen. A. Section of trailing plant in habit. B. Flower in lateral view. C. Dissected and spread open corolla showing inner side. D. Anther in ventral view. E. Anther and corona in side view. F. Flowers with corolla removed (lateral view). G. Gynostegium in lateral view. H. Pollinia. Drawn by Jing-Jing Yan.

**Table 1.** Morphological comparison of *Marsdenia burmanica*, *M. hainanensis*, *M. sinensis* and *M. tenii*.

Characters	<i>M. burmanica</i>	<i>M. hainanensis</i>	<i>M. sinensis</i>	<i>M. tenii</i>
Inflorescences	dichasial cyme	dichasial cyme	dichasial cyme	umbel-like cymules along unbranched rachis
Flower shape	campanulate	urceolate to campanulate	campanulate	unknown
Gynostegium shape	fusiform	conical to globose	conical	conical
Gynostegium length	exserted from corolla tube	exserted from corolla tube	exserted from corolla tube	unknown
Stigma head	2-cleft	not cleft	2-cleft	2-cleft
Corolla colour	purple	yellowish-white	yellowish or yellow-white	white
Corona lobes protrusions	2 oval protrusions	without protrusion	without protrusion	almost flat

Diagnosis: *Marsdenia burmanica* is morphologically similar to *M. hainanensis*, *M. sinensis*, and *M. tenii* (Table 1), but differs from *M. hainanensis* in the fusiform gynostegium, 2-cleft stigma head, purple corolla and 2 oval protrusions; and differs from *M. sinensis* in the fusiform stigma head, purple corolla and 2 oval protrusions at the corona base; and also differs from *M. tenii* in dichasial cyme, fusiform gynostegium, purple corolla and 2 oval protrusions.

Description: Lianas, finely yellowish tomentose, sap white. **Leaves** opposite, blades elliptic to ovate-oblong, 105–150 × 60–80 mm, thick papery, base cordate, apex short acuminate, margin revolute; lateral veins 5 or 6 pairs; sparsely hairy adaxially, densely tomentose abaxially; petiole 30–42 mm, pubescent. **Inflorescences** dichasial cyme, 40–55 × 80–120 mm, 10–22 flowers, forked at right angles to peduncle; peduncle 20–30 mm, pubescent; Pedicel 6–9 mm, pubescent. **Sepals** ovate, ca. 2 mm long, pubescent outside. **Corolla** purple, campanulate, 8–12 mm in diam.; lobes ovate, apex rounded, twisted to the right, ca. 3.0 × 1.7 mm, spreading or recurved, glabrous outside, densely pubescent inside; tube ca. 4 mm, glabrous outside; **Corona** lobes ovate, fleshy, apex higher than pollinarium but shorter than anthers and corolla tube, base with 2 oval protrusions. Anther appendages oblong, apex membranous, shorter than stigma head. **Pollinia** 2 per pollinarium, erect, reniform. **Gynostegium** fusiform, exserted from corolla tube, ovary dark purple, stigma head apex 2-cleft. Follicles and seeds not seen.

Distribution & habitat: At present, *M. burmanica* has only been found in the type locality. It grows in the sunny part of hillsides, at an elevation of ca. 900 m.

Phenology: Flowers were observed at the Xishuangbanna Tropical Botanic Garden in cultivation from September to October.

Etymology: The new species found in northern Myanmar, thus the specific epithet “burmanica” was chosen. The Chinese name is “緬甸牛奶菜”.

Conservation assessment: This new species is only known from the type locality. Northern Myanmar is extremely rich in biodiversity (Kress *et al.*, 2003), yet botanically it is not well-explored despite the discovery of some new taxa from this area in recent years (eg. Wahlsteen, 2018; Yang *et al.*, 2017; Liu *et al.*, 2017;

Aung *et al.*, 2017). More fieldwork still need to be done in order to get a better understanding of the full natural distribution of this taxon. According to IUCN Red List criteria (2019), this new species should be assessed as Data Deficient (DD; criteria B1ab(i–v) + 2ab(i–v)).

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LITERATURE CITED

- Acevedo-Rodríguez, P. 1999. West Indian novelties I: a new species of *Marsdenia* (Asclepiadaceae) from Puerto Rico and a new name for a Jamaican species of *Calyptanthus* (Myrtaceae). *Brittonia*. **51**(2): 166–169.
- Aung Y. L., X.-H. Jin and A. Schuiteman 2017. *Coelogyne putaoensis* (Orchidaceae), a new species from Myanmar. *PhytoKeys*. **82**:27–34.
- Brown, R. 1810. *Prodromus Florae Novae Hollandiae et Insulae van Diemen*, In: J. Johnson and Co.(eds.), London, pp. 460.
- Carnevali, G., J.C. Trejo-Torres, V. Juárez-James, R. Duno, J.L. Tapia-Muñoz, I.M. Ramírez-Morillo and W. Cetzal-Ix 2016. *Marsdenia calichicola* (Apocynaceae), a narrow endemic, endangered new species from the Mexican Yucatan Peninsula. *Phytotaxa*. **270**(2): 146–154.
- Endress, M.E. and P.V. Bruyns 2000. A revised classification of the Apocynaceae s. l. *Botanical Review*. **66**(1): 1–56.
- Endress, M.E., S. Liede-Schumann and U. Meve 2014. An updated classification for Apocynaceae. *Phytotaxa*. **159**(3): 175–194.
- Endress, M.E., U. Meve, D.J. Middleton and S. Liede-Schumann 2018. Apocynaceae. In: J. Kadereit, V. Bittrich (eds). *Flowering Plants. The Families and Genera of Vascular Plants*, vol 15. Springer, Cham. pp. 207–411.
- Espirito, S.F.D.S.D., S. Batista, R.P. Luz and R. Alessandro 2018. Three new species of *Marsdenia* (Apocynaceae) from Brazil. *Acta Bot. Brasilica* **32**(2): 247–253.
- Fernando, E.S. and M. Rodda 2013. *Marsdenia purpurella* (Apocynaceae: Asclepiadoideae), a new species from the Philippines. *Gard. Bull. (Singapore)*. **65**(2): 143–148.
- Forster, P.I. 1995a. New names and combinations in *Marsdenia* (Asclepiadaceae: Marsdenieae) from Asia and Malesia (excluding Papuaia). *Aust. Syst. Bot.* **8**(5): 691–701.



- Forster, P.I.** 1995b. Circumscription of *Marsdenia* (Asclepiadaceae: Marsdenieae), with a revision of the genus in Australia and Papuasias. *Aust. Syst. Bot.* **8(5)**: 703–933.
- Hooker, J.D.** 1885. Asclepiadeae. *Flora of British India*, Vol. 4. L. Reeve, London, pp. 387–558.
- IUCN.** 2019. The IUCN Red List of Threatened Species. Version 2019-2. <https://www.iucnredlist.org>. Accessed on 20 November 2019.
- Juárez-Jaimes, V.** 2008. Una nueva especie de *Marsdenia* (Apocynaceae, Asclepiadoideae) de la Región de Chamela Cuixmala del estado de Jalisco, México. *Novon* **18(3)**: 357–360.
- Juárez-Jaimes, V.** 2015. *Marsdenia stevensiana* (Apocynaceae, Asclepiadoideae), a new species from Chiapas, Mexico. *Novon* **24(2)**: 170–172.
- Juárez-Jaimes, V. and A. Saynes** 2008. A new species of *Marsdenia* (Apocynaceae, Asclepiadoideae) from the Pochutla Region in the State of Oaxaca, Mexico. *Novon* **24(1)**: 27–30.
- Juárez-Jaimes, V. and L.O. Alvarado-Cárdenas** 2010. Two new species of *Marsdenia* R.Br. (Apocynaceae) from Mexico. *Candollea* **65(1)**: 63–68.
- Juárez-Jaimes, V. and L. Lozada-Pérez** 2015. *Marsdenia microcarpa*, a new species of *Marsdenia* (Apocynaceae, Asclepiadoideae) from montane Guerrero, Mexico. *Phytotaxa* **217(1)**: 92–95.
- Juárez-Jaimes, V. and W.D. Stevens** 1999. A new *Marsdenia* (Apocynaceae, Asclepiadoideae) from Baja California. *Novon* **9(4)**: 565–567.
- Kress, W.J., R.A. DeFilipps, E. Farr and D.Y.Y. Kyi** 2003. A Checklist of the Trees, Shrubs, Herbs, and Climbers of Myanmar (revised from the original works by JH Lacc, R. Rodger, HG Hundley and U Chit Ko Ko on the “List of trees, shrubs, herbs and principal climbers etc. recorded from Burma”). *Contributions from the United States National Herbarium Volume 45*. 590 pp.
- Li, P.-T., M.G. Gilbert and W.D. Stevens** 1995. Asclepiadaceae. In: Wu, Z.Y. and Raven, P.H. (eds) *Flora of China*, vol. 16. Science Press, Beijing and Miss. Bot. Gard. Press, St. Louis, pp. 243–249.
- Li, P.-T. and Y.-H. Li** 1982. A new species of *Marsdenia* (Asclepiadaceae) from Yunnan. *Acta Bot. Yunnanica* **4(2)**: 157–159.
- Liede-Schumann, S., S.J. Reuss, U. Meve, G. Gâteblé, T. Livshultz, P.I. Forster, L. Wantorop and M. Rodda** 2022. Phylogeny of Marsdenieae (Apocynaceae, Asclepiadoideae) based on chloroplast and nuclear loci, with a conspectus of the genera. *Taxon* **71(4)**: 833–875.
- Liu, C., J.-D. Ya, Y.-H. Tan, H.-J. He, G.-J. Dong, and D.-Z. Li** 2019. *Marsdenia yarlungzangboensis* (Apocynaceae, Asclepiadoideae), a new species from Xizang, China. *PhytoKeys* **130**: 85–92.
- Liu Q., S.-S. Zhou, R. Li, M.-X. Zhang, M. Zyaw, S. Lone and R.-C. Quan** 2017. *Bulbophyllum putaoensis* (Orchidaceae: Epidendroideae; Malaxideae), a new species from Kachin State, Myanmar. *Phytotaxa* **305(1)**: 57–60.
- Meve, U., G. Gâteblé and S. Liede-Schumann** 2018. Two new species from the Ile des Pins (New Caledonia), and a not so new species from Grande Terre (New Caledonia). *Phytotaxa* **349(3)**: 201–213.
- Rapini, A. and J.F. Pereira.** 2011. Two new species of *Marsdenia* R. Br. (Apocynaceae: Asclepiadoideae) from the semi-arid region of Brazil. *Kew Bull.* **66(1)**: 137–142.
- Santo, F.S.E., D.J.L. Sousa, D.B. Chagas, I.L. Morais and A. Rapini** 2018. Four New Species of *Marsdenia* (Apocynaceae) from the Cerrado Domain. *Syst. Bot.* **43(2)**: 571–578.
- Stevens, W.D.** 2009. Apocynaceae. In: Davidse G., Sousa M., Knapp S., Chiang F. (eds) *Flora Mesoamericana* vol. 4, Parte 1, Cucurbitaceae a Polemoniaceae. Universidad Nacional Autónoma de México, pp. 662–768.
- Stevens, W.D., J.N. Labat and F. Barthelat** 2016. Two new species of Apocynaceae, Asclepiadoideae from Mayotte. *Candollea* **71(1)**: 127–134.
- Tsiang, Y. and P.-T. Li** 1977. Asclepiadaceae. *Flora Reipublicae Popularis Sinicae*, vol. 63. Science Press, Beijing, pp. 442–465.
- Wahlsteen, E.** 2018. *Begonia mariachristinae* (Begoniaceae), a new species from northern Myanmar. *Edinb. J. Bot.* **75(2)**: 1–6.
- Yang, B., S.-S. Zhou, K.W. Maung and Y.-H. Tan** 2017. Two new species of *Impatiens* (Balsaminaceae) from Putao, Kachin State, northern Myanmar. *Phytotaxa* **321(1)**: 103–113.
- Yoganarasimhan, S.N. and K. Subramanyam** 1976. A new species of *Marsdenia* R.Br. (Asclepiadaceae) from south India. *Proceedings of the Indian National Science Academy, Section B.* **83(4)**: 147–149.
- Zhao, Z.E. and Y.M. Wang** 1991. A new species of *Marsdenia* from Hubei. *Journal of Wuhan Botanical Research* **9(1)**: 43–44.