

## Nomenclatural notes on the genus *Schizomussaenda* H.L.Li (Rubiaceae)

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### ABSTRACT

In the present study, three synonyms of *Schizomussaenda henryi*, namely *Emmenopterys rehderi*, *Mussaenda dehiscens* and *Schizophragma macrosepalum* are lectotypified. Additionally, a revised description of *S. henryi* is provided based on Thai materials examined. *Schizomussaenda henryi* from Thailand is illustrated.

KEYWORDS: lectotypification, Thailand.

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### INTRODUCTION

*Schizomussaenda* H.L.Li is a monotypic genus in tribe Mussaendeae, subfamily Ixoroideae *s.l.*, Rubiaceae (Li, 1943; Alejandro *et al.*, 2005; Deng & Zhang, 2008), typified by *Schizomussaenda henryi* (Hutch.) X.F.Deng & D.X.Zhang initially described as *Mussaenda henryi* Hutch. in a broad circumscription of *Mussaenda* L. (Miquel, 1857; Hooker, 1880; Kurz, 1887; Hutchinson, 1916; Wernham, 1916). Detailed morphological studies conducted on *Mussaenda s.l.* revealed three distinct but closely related allied genera, namely *Pseudomussaenda* Wernham, *Schizomussaenda* and *Neomussaenda* Tange worthy of recognition from *Mussaenda s.s.* (Puff *et al.*, 1993; Tange, 1994); these three allied genera were later shown to be well-supported based on molecular evidence (Alejandro *et al.*, 2005).

During research on *Mussaenda* and *Schizomussaenda* for the Flora of Thailand, it became apparent that *Emmenopterys rehderi* F.P.Metcalf, *Mussaenda dehiscens* Craib and *Schizophragma macrosepalum* Hu, all now considered synonyms of *Schizomussaenda henryi*, require typification and in order to foster taxonomic stability within *Schizomussaenda*, these names are typified here. In addition, a revised description of *S. henryi*, with additional Notes about the genus in Thailand, are provided.

### MATERIAL AND METHODS

This work was based on herbarium specimens (including types) on visits to AAU, ABD, BCU, BK, BKF, BM, E, K, KKU, KYO and QBG; additionally, images of herbarium specimens were examined on virtual herbaria of GH, P, PE and US. All herbarium acronyms cited follow Thiers (2017). Data gathered from fieldwork was also included here in this study. Citation of authors of plant names follow Brummitt & Powell (1992).

### TAXONOMIC TREATMENT

***Schizomussaenda henryi*** (Hutch.) X.F.Deng & D.X.Zhang, *Blumea* 53(2): 390. 2008.— *Mussaenda henryi* Hutch. In Sargent, *Pl. Wilson.* 3(2): 397. 1916, (publ. 31 August 1916). Type: China, Yunnan, south of the Red River, 1900, *Henry 13660* (holotype **K** [K000740983]).

— *Mussaenda elongata* Hutch. in Sargent, *Pl. Wilson.* 3(2): 398. 1916. Type: China, Yunnan, Simao (Szemao), 1901, *Henry 12363* (holotype **K** [K000740984]).

— *Mussaenda dehiscens* Craib, *Bull. Misc. Inform. Kew* 1916: 263. 1916, (publ. 30 December 1916). Types: Thailand, Chiang Rai, Wiang Pa Pao (Wieng Papao), 9 Mar. 1912, *Kerr 2522* (lectotype **K** [K000740980] designated here, isolectotypes **BM**

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[BM000945195], **K** ([K000740981], [K000740982]) and **E** [E00327835]).

— *Schizophragma macrosepalum* Hu, J. Arnold Arbor. 11: 48. 1930, [not in Hydrangeaceae]. Types: China, Kwangsi (Guangxi), Shangsi, Shiwandasham, south of Nanning, 15 Oct. 1928, *Ching 7871* (lectotype **PE** [00838662] (digital image examined and seen), designated here, isolectotype **PE** [00838663] (digital image examined and seen)).

— *Emmenopterys rehderi* F.P.Metcalf, Lingnan Sc. J. 11: 528. 1932. Types: Thailand, route from Chiang Mai to Chiang Rai, wet valley beyond Mae Loi, 5 Jan. 1922, *Rock 1854* (lectotype **GH** [A00002559] (digital image examined and seen), designated here; isolectotype **US** [00130613] (digital image examined and seen)).

— *Schizomussaenda dehiscens* (Craib) C.Tao & C.M.Taylor in C. Tao *et al.*, Fl. China 19: 322. 2011.

Tree or shrub 1.5–8 m tall; young branches with shining hairs, greyish yellow or brown, lenticellate. *Leaves* chartaceous, ovate, oblanceolate, elliptic or ovate-lanceolate, 10–18 by 3–6 cm, base attenuate, obtuse or subcordate, apex acuminate, margin entire or subundulate; secondary veins 9–11 pairs, vanishing near margin, veins on lower surface with hairs; petioles 6–15 mm long, hairy; interpetiolar stipules 5–13 by 3–5 mm, adpressed hairy. *Inflorescence* 5–15 cm long; each scorpioid cyme with up to ca 9 flowers; peduncle short or absent. *Flowers* heterostylous, subsessile; swollen uppermost part of buds 5-angled and with a central, erect point with acuminate

apices of corolla lobes, yellowish white with short hairs; bract lanceolate, 1–1.5 cm long, apex acute; bracteole ca 2 mm long. *Calyx* lobes lanceolate to triangular, 1.3 by 1 mm, hairy, apex acute; calycophylls ovate or oblong, 8–15 by 3–6.5 cm, white, with stipes 1–3 cm long. *Corolla* orange to yellow; tube 2–2.7 cm long, apex emarginate, outside with short hairs, inside with long hairs; lobes 3–4.5 by 3–5 mm. *Stamens* with short filaments, inserted on petals; anthers 3–5 mm long, protruding tips in short-styled flower only. *Ovary* elongate-turbinate, 3 by 1.5–2 mm, puberulous, with 2 locules, each locule with several ovules; style 1.5–1.8 cm long in long-styled flower, shorter in short-styled flower; stigma lobes up to ca 8 mm long in long styled-flower, often ca 2 mm long in short-styled flower. *Fruit* turbinate, ovoid or ellipsoid, 6–10 by 4–6 mm long, sparsely hairy to glabrescent. *Seeds* 0.5 mm in diam., dark brown (Fig. 1).

Thailand.—NORTHERN: Chiang Mai [Doi Pui, alt. 1500–1685 m, 20 Sept. 1971, *Murata et al. T-15351* (**BKF**)]; Chiang Rai [Doi Tung, alt. 600 m, 26 Sept. 1967, *Iwatsuki et al. T-11159* (**AAU, BKF, E, K, KYO**)]; Khun Korn waterfall, alt. 680 m, 22 June 2002, *Chamchumroon et al. VC1611* (**BKF-2** sheets); Wiang Pa Pao, 9 Mar. 1912, *Kerr 2522* (**BM, E, K-3** sheets); no location, 2 Oct. 1998, *Chayamarit 1171* (**BKF**)]; Nan [Doi Phu Kha National Park, alt. 1450 m, 25 Jun. 1999, *Srisanga 745* (**BKF, KYO**)]; *ibid.*, alt. 1200 m, 22 Sept. 1996, *Pooma 1364* (**BKF**)]; *ibid.*, alt. 1275 m, 23 July 1994, *Maxwell 94-801* (**BKF**)]; Tak (Tha Song Yang, km 147–148, Mae Sot-



Figure 1. *Schizomussaenda henryi* (Hutch.) X.F.Deng & D.X.Zhang: A. habit; B. inflorescence.

Mae Sariang road no. 105, 15 Sept. 2005, *Pooma 5698* (BKF); Umphang, km 115 en route from Mae Sot to Umphang, alt. 1320 m, 15 July 1999, *Wongprasert 997-93* (BKF-2 sheets); Umphang, Li So waterfall, alt. 706 m, 19 June 2011, *Chamchumroon et al. 4906* (BKF); NORTH-EASTERN: Loei [Phu Suan Sai National Park, 10 July 2008, *Maknoi 2557* (BKF)].

Distribution.—China (Yunnan-type), Laos, Myanmar, Vietnam.

Ecology.—Deng & Zhang (2008) recorded *Schizomussaenda* at edges of seasonal and lower montane rainforests, often in ravines, open thickets, and hill evergreen forest of Myanmar, southern China, northern parts of Laos and Vietnam. In Thailand, *S. henryi* has been recorded occurring at the edge of seasonal and lower montane rainforests, often in secondary scrub vegetation in ravines and open thickets; as well as on hill evergreen forest frequently on dry, clayey soil at 50–1685 m alt.

Vernacular.—Kabo (กะบอ), kamboe ton (กำเขือดั้น) (Northern).

Note.—Deng & Zhang (2008) considered *Mussaenda dehisca* Craib to be conspecific with *Schizomussaenda henryi* and included it as a synonym of the latter. Besides that, they also suggested *Kerr 2522* at **K** could be the “holotype” for *M. dehisca*. After careful examination of the protologue of *M. dehisca* in Craib (1916), I concur with Li (1943) that *M. dehisca* is based on a gathering of specimens, considered as syntypes, that consist of *Kerr 2522*, *Henry 12825*, *Balansa 2683*, *Balansa 2684* and *Wilson 13642*. Hence, the name *M. dehisca* requires lectotypification. After much consideration, I proposed *Kerr 2522* to be designated as the type as it agrees well with the protologue in accordance with the guidelines of Art. 9.2 and Recommendations 9A, 9C and 9D of the Melbourne Code (McNeill *et al.*, 2012). Five sheets of *Kerr 2522* collected from Wiang Pa Pao district, Chiang Rai province, northern Thailand, were located from three herbaria, namely **BM** [BM000945195], **K** ([K000740980], [K000740981], [K000740982]) and **E** [E00327835]. I proposed one of the best and better preserved specimens at **K**, K000740980, as the lectotype.

Hu (1930) described *Schizophragma macrosepalum* H.H.Hu based on *Ching 7871* as a new species

of *Schizophragma* (Hydrangeaceae) from China, but actually this species belongs to *Schizomussaenda*. Deng & Zhang (2008) cited that the “holotype” of *S. macrosepalum* is at **PE**, but I have discovered that this species was described based on a single collection represented by two sheets filed as isotypes at **PE**. These two sheets are now considered as syntypes. Therefore, in accordance with the guidelines of Art. 9.2 and Recommendations 9A, 9C and 9D of the Melbourne Code (McNeill *et al.*, 2012), sheet 00838662 at **PE** is designated here as lectotype for the name *S. macrosepalum*.

Regarding *Emmenopterys rehderi* F.P.Metcalf, two collections were cited in the protologue (see Metcalf, 1932), namely *Rock 1854* (**GH** [A00002559] and **US** [00130613]) from Thailand, and *Rock 2303* (**GH** [A00002558] and **US** [00956089]) from Myanmar. These two collections are considered as syntypes. In accordance with the guidelines of Art. 9.2 and Recommendations 9A, 9C and 9D of the Melbourne Code (McNeill *et al.*, 2012), I propose *Rock 1854* at **GH** [A00002559] as the lectotype.

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## REFERENCES

- Alejandro, G.D., Razafi Mandimbison, S.G. & Liedt-Schumann, S. (2005). Polyphyly of *Mussaenda* inferred from ITS and *trnT-F* data and ITS implication for generic limits in Mussaendeae (Rubiaceae). *American Journal of Botany* 92(3): 544–557.
- Brummitt, R.K. & Powell, E. (eds). (1992). *Authors of Plant Names*. Royal Botanic Gardens, Kew.
- Craib, W.G. (1916). XLVII. Contributions to the Flora of Siam. Additamentum IX. *Bulletin Miscellaneous Information*, Kew 1916: 259–269.

- Deng, X.F. & Zhang, D.X. (2008). Revision of *Schizomussaenda* (Rubiaceae). *Blumea* 53(2): 385–392.
- Hooker, J.D. (1880). *Flora of British India* 3, *Mussaendeae*: 86–92. Reeve & Co. Ltd, London, UK.
- Hu, H.H. (1930). *Notulae Systematicae and Floram Sinensem*. *Journal of Arnold Arboretum* 11: 48–49.
- Hutchinson, J. (1916). *Rubiaceae: Mussaenda*, In: *Planta Wilsonianae*. C.S. Sargent (ed.) vol. 3, pp. 397–398.
- Kurz, S. (1887). *Forest Flora of British Burma*. 2, *Mussaenda*: 55–58. M/S Brshen Singh Mahendra Pal Singh, Dehra Dun, India and M/S Periodical Experts, Delhi, India.
- Li, H.L. (1943). *Schizomussaenda*, a new genus of the Rubiaceae. *Journal of the Arnold Arboretum* 24(1): 99–102.
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme van Reine, W.F., Smith, G.F., Wiersema, J.H. & Turland, N.J. (eds). (2012). *International Code of Nomenclature for Algae, Fungi, and Plants (Melbourne Code)*, Adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011. *Regnum Vegetabile* 154, Koeltz Scientific Books, Königstein. (<http://www.iapt-taxon.org/nomen/main.php>).
- Metcalf, F.P. (1932). Botanical notes on Fukian and southeast China, XV. *Lingnan Science Journal* 11: 528–529.
- Miquel, F.A.W. (1857). *Flora van Nederlandsch-Indië*. 2. *Aphaenandra*: 341–342. Amsterdam, Netherlands.
- Puff, C., Igersheim, A. & Rohrhofer, U. (1993). *Pseudomussaenda* and *Schizomussaenda* (Rubiaceae): close allies of *Mussaenda*. *Bulletin du Jardinbotanique National de Belgique* 62: 35–68.
- Tange, C. (1993). *Neomussaenda* (Rubiaceae), a new genus from Borneo. *Nordic Journal of Botany* 14: 495–500.
- Thiers, B. (2017). *Index Herbariorum: A Global Directory of Public Herbaria and Associated Staff*. New York Botanical Garden's Virtual Herbarium. <http://sweetgum.nybg.org/ih/> accessed on: 5 August 2017.
- Wernham, H.F. (1916). *Pseudomussaenda*: a new genus of Rubiaceae. *Journal of Botany* 54: 297–301.