

REVISION OF SCHIZOMUSSAENDA (RUBIACEAE)

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SUMMARY

Based on specimen examination and field observation, both *Mussaenda henryi* Hutch. and *M. elongata* Hutch. were transferred from *Mussaenda* to *Schizomussaenda*. A new combination, *Schizomussaenda henryi* (Hutch.) X.F.Deng & D.X.Zhang, was made for *Mussaenda henryi* Hutch. *Mussaenda elongata* Hutch. and *Schizomussaenda dehiscens* (Craib) H.L.Li were reduced to synonymy of *S. henryi*.

Key words: Rubiaceae, *Mussaenda*, *Schizomussaenda*, combination, synonym.

INTRODUCTION

Mussaenda L. is a large paleotropical genus of Rubiaceae, and its circumscription has always been controversial between different authors (Miquel 1857, Hooker 1880, Kurz 1887, Wernham 1916, Li 1943, Alejandro et al. 2005). Recently, Alejandro and collaborators (2005) conducted phylogenetic analyses based on ITS and trnT-F sequence data, suggesting a new circumscription of *Mussaenda* s.s with c. 132 species and endorsing a close relationship of *Mussaenda* to *Schizomussaenda*, *Pseudomussaenda* and *Neomussaenda* (Tange 1994).

Schizomussaenda was established by Li (1943), based on a sole species, *S. dehiscens* (Craib) H.L.Li. This species had been previously described as *Mussaenda dehiscens* Craib (1916). The diagnostic characters of this monotypic genus include its loculicidally 2-valved capsular fruit, dehiscing at the top, the elongated scorpioid-cymose inflorescence, and the long petiole of petaloid calyx-lobe (Fig. 1). Otherwise it is similar to other *Mussaenda* species in floral and gross morphology. Most recent studies on Rubiaceae recognize its generic status (Puff et al. 1993, Tange 1994, Bremer & Thulin 1998, Alejandro et al. 2005).

MATERIALS AND METHODS

More than one hundred collections of herbarium specimens from GXMI, HITBC, IBK, IBSC, K, KUN, L, P and PE, including the type specimens of both *Mussaenda henryi* and *M. elongata*, and most of the original materials cited in Li (1943) were examined. The type of *Schizomussaenda dehiscens*, despite all the efforts, however, has not been able to be located.

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Fig. 1. Photograph of *Schizomussaenda henryi* (Hutch.) X.F.Deng & D.X.Zhang, showing scorpioid-cymose inflorescence (X.F. Deng & H. Ren 442, IBSC). Scale = 2 cm.

Field studies were carried out at Xishuangbanna Tropical Botanical Garden and along Xiaola Highway, Mengla County, Yunnan Province (China) in 2005 and 2006. We sampled three populations of *Schizomussaenda dehiscens*, one population at Xishuangbanna Tropical Botanical Garden (voucher: X.F. Deng & H. Ren 400) and the others both along Xiaola Highway in Xishuangbanna (voucher: X.F. Deng & H. Ren 442, X.F. Deng & L. Gu 513). Ten individuals per population were randomly collected to observe and measure plant size, leaf size and shape, petaloid calyx-lobe size and shape, corolla-tube length, style and stigma length, and stamen height.

RESULTS

During our field works in Yunnan Province, we found that *Schizomussaenda dehiscens* (Fig. 1) is a locally abundant species. The measurement data derived from field notes and observations revealed that the genus is distylous. Within the same population of *S. dehiscens*, it is variable in plant height (2–8 m tall), shape and size of the leaf and petaloid calyx-lobe. The leaf shape varies from ovate, narrowly ovate, to elliptic or narrowly elliptic (10–25 by 2.5–8 cm). The leaf base is rounded, attenuate or cuneate. The petaloid calyx-lobe is ovate with attenuate or rounded base (6–11 cm long) and the petiole is 1.7–3.5 cm long. In short-styled (thrum) flowers the length of the corolla-tube is 2.3–2.85 cm, the length of the style/stigma is 1.87–2.55 cm, and the height of the stamen is 2.7–3.13 cm. In long-styled (pin) flowers the length of corolla-tube, style/stigma and stamens are 2.55–3.1, 2.63–3.46 and 2.22–3.12 cm long, respectively.

The type specimens of *Mussaenda henryi* (Fig. 2) and *M. elongata* (Fig. 3) are indistinguishable from specimens identified as *Schizomussaenda dehiscens* (Fig. 4) in floral

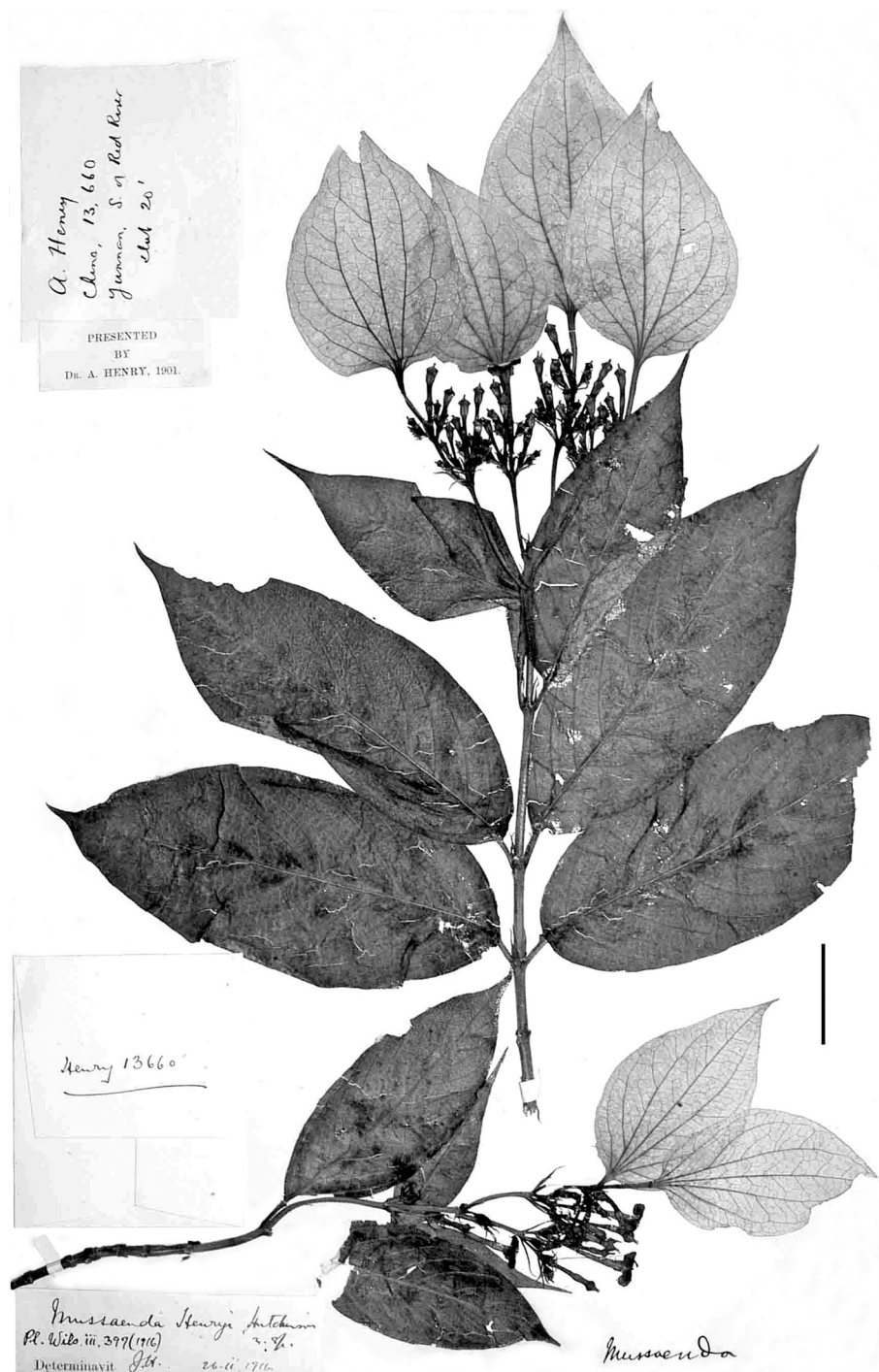


Fig. 2. Photograph of the type specimen of *M. henryi* Hutch. (Henry 13660, K). Scale = 4 cm.

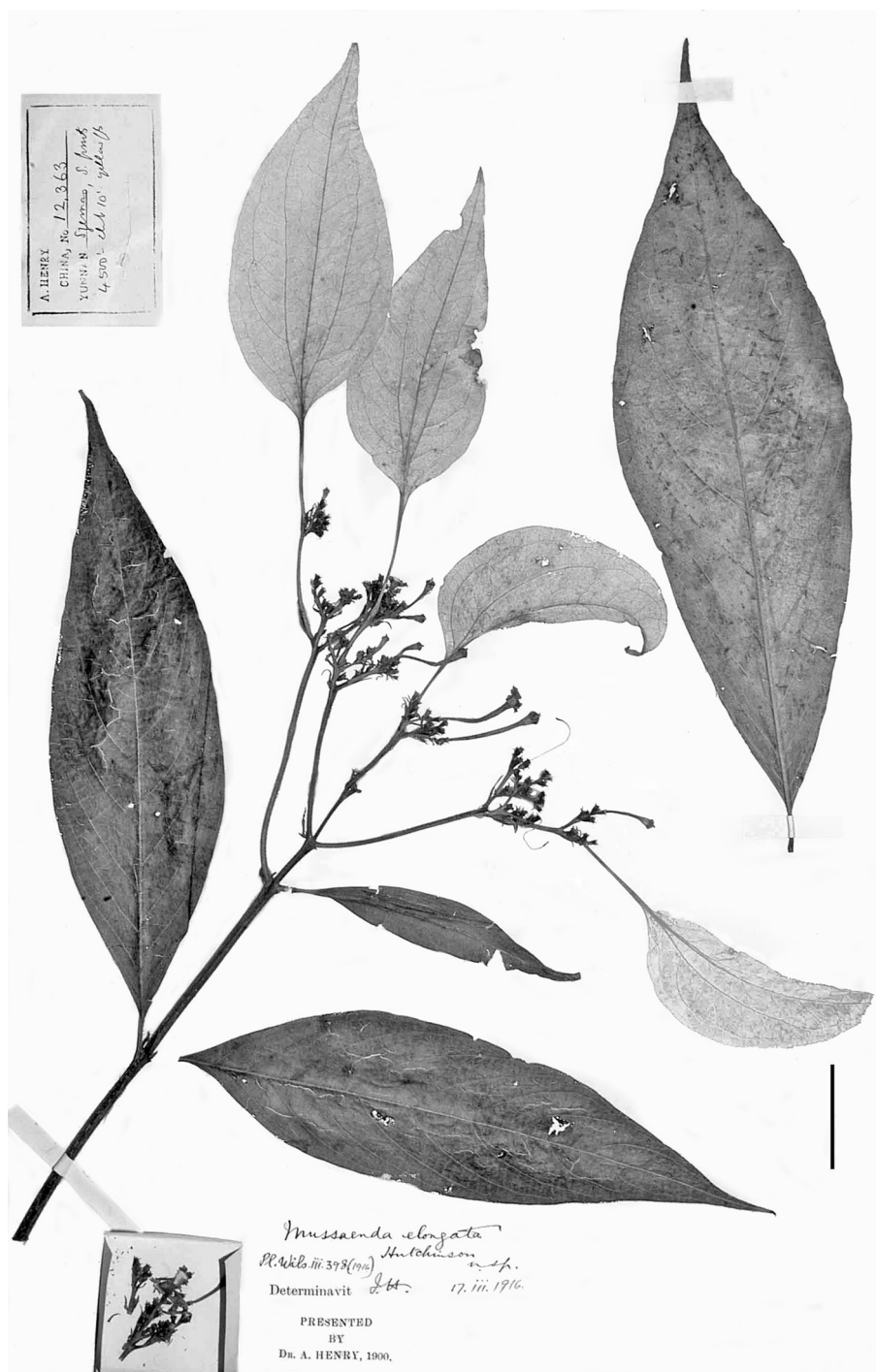


Fig. 3. Photograph of the type specimen of *M. elongata* Hutch. (Henry 12363, K). Scale = 4 cm.



Fig. 4. Photograph of a specimen identified as *Schizomussaenda dehiscens* (Craib) H.L.Li. (W.T. Tsang 30214, L). Scale = 4 cm.

characters but the shape and size of the leaves and petaloid calyx-lobes. The leaves of *Mussaenda henryi* are elliptic or narrowly elliptic with rounded base, up to 10–15 by 4–6 cm and the white petaloid calyx-lobes are ovate with rounded base, up to 7–10 by 4.5–7 cm (with petiole 2–2.5 cm long), whereas in *M. elongata*, the leaves are narrowly elliptic with attenuate base, up to 18–24 by 5–7 cm and the white petaloid calyx-lobes are narrowly ovate with attenuate base, up to 8–12 by 4–5 cm (with petiole 3–3.5 cm long). But according to our field studies mentioned above, the difference between *M. henryi* and *M. elongata*, and between each of them to *Schizomussaenda dehiscens*, falls well within the range of variation of *S. dehiscens* within a single population. Although all two type specimens lacked fruits, the elongated scorpioid-cymose inflo-

rescence and floral characters all demonstrate well their *Schizomussaenda* characteristics. The type specimens of *M. henryi* and *M. elongata* are indeed conspecific with *Schizomussaenda dehiscens*. Therefore, the three names are reduced to one. Because the name *Mussaenda henryi* has priority over both *M. elongata* and *M. dehiscens*, a new combination, *Schizomussaenda henryi* (Hutch.) X.F.Deng & D.X.Zhang, is proposed, and the other two names, *M. elongata* and *M. dehiscens*, are reduced to its synonymy.

TAXONOMIC TREATMENT

SCHIZOMUSSAENDA

Schizomussaenda H.L.Li (1943) 100; Puff, Igersheim & Rohrhofer (1993) 35. — Type: *Schizomussaenda dehiscens* (Craib) H.L.Li = *Schizomussaenda henryi* (Hutch.) X.F.Deng & D.X.Zhang.

Erect shrub or small tree. *Leaves* chartaceous, ovate, narrowly ovate, elliptic, or narrowly elliptic, apex acuminate, base rounded, attenuate or cuneate; stipules narrowly ovate, bifid. *Inflorescences* scorpioid-cymose, terminal. *Flowers* hermaphrodite, heterostylous, 5-merous; calyx lobes normal narrowly ovate, petaloid calyx lobes white, ovate, with long-petiole; corolla salverform, tube long, lobes broadly obovate, orange-yellow. *Fruits* capsule, loculicidally 2-valved, dehiscent at the top. *Seeds* numerous.

With a sole species, *Schizomussaenda henryi*, distributed in southern China, northern Vietnam, northern Thailand, and Burma.

DESCRIPTION OF THE SPECIES

Schizomussaenda henryi (Hutch.) X.F.Deng & D.X.Zhang, *comb. nov.*

Schizomussaenda henryi (Hutch.) X.F.Deng & D.X.Zhang. — *Mussaenda henryi* Hutch. (1916) 397; C.Y.Wu (1984) 1263. — Type: *Henry 13660* (holo K), China, Yunnan, south of the Red River, 1900.

Mussaenda elongata Hutch. (1916) 398, *syn. nov.* — Type: *Henry 12363* (holo K), China, Yunnan, Simao (Szemao), 1901.

Schizophragma macrosepalum Hu (1930) 48; Hu & Chun (1935) 13. — Type: *R.C. Ching 7871* (holo PE), China, Guangxi, Shangsi, Shiwandashan.

Schizomussaenda dehiscens (Craib) H.L.Li (1943) 100; Anonymous (1975) 198; C.Y. Wu (1984) 1272. — *Mussaenda dehiscens* Craib (1916) 263; Pit. (1923) 174; Chun (1934) 306, *syn. nov.* — Type: *Kerr 2522* (holo K?), Thailand, Chiengrai, Wieng Papao.

Erect shrub or small tree, 2–8 m high. Young *stems* hirtellous, gradually glabrescent. *Leaves* chartaceous, ovate, narrowly ovate, elliptic or narrowly elliptic, 10–25 by 2.5–8 cm, apex acuminate, base rounded, attenuate or cuneate; stipules narrowly ovate, 0.5–1.2 cm long, bifid. *Inflorescences* scorpioid-cymose, terminal with 30–65 flowers. *Flowers* hermaphrodite, heterostylous, 5-merous; flowers long-styled: calyx-tube elliptic, 3.22–4.36 by 1.86–2.76 mm, calyx lobes normal lanceolate, 1.45–3.51 mm, petaloid calyx lobes white, ovate, 5.5–10.5 by 2.5–4.9 cm, with long-petiole 1.5–3.3 cm long; corolla salverform, corolla-tube 2.57–3.63 cm long, corolla lobes broadly obovate, with long apiculate, orange-yellow; stamens 5, inserted in middle

of corolla; anther linear, 3.23–4.41 mm long; style 2.63–3.46 cm long, stigma bifid, 2.33–3.54 mm long; flowers short-styled: calyx and corolla similar to flowers long-styled, stamens 5; anther linear, 3.05–4.44 mm long; style 1.87–2.55 cm long; stigma bifid, 2.85–3.79 mm long. *Fruits* elliptic, capsule, loculicidally 2-valved dehiscent at the top. *Seeds* tiny, numerous.

Distribution — Northern Burma, northern Thailand, northern Vietnam, south-western and southern China (Yunnan, Guangxi).

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IDENTIFICATION LIST

All these examined specimens belong to *Schizomussaenda henryi*

- Anonymous (Yunnan Exploitation Bureau) 59, 789, 1235.
C.C. Chang 11679, 11760, 11894, 13373, 14208 — Wei-Chiu Chen 421 — R.C. Ching 7871, 7978
— S.H. Chun 4399, 5172, 11845, 12698 — J.Y. Cui 14679.
X.F. Deng & L. Gu 504, 506, 513 — X.F. Deng & H. Ren 399, 400, 409, 412, 442, 448, 449.
Exped. 23854, 34939.
K.M. Feng 12557, 13339, 22666.
A. Henry 12363, 13660 — D.A. Huang 61543.
S.P. Ko 55203, 56004.
Lan 6727 — H.Q. Li 40856 — Y.H. Li 298, 1387, 5227 — H.Y. Liang 65912, 69546 — W.S. Liu
747 — Lüchun Exped. 1597, 1831.
P.I. Mao 2722, 2859, 2970, 3162, 7007 — Maxwell 94-801.
Ninh, Binh & Hoang 9795.
S.J. Pei 9344.
De-Hai Qin 80016.
H.H. Soo 68521.
Pui-Cheung Tam 57432 — G.D. Tao 7070, 8267, 15689, 16187, 21386, 39978, 47797, 49178 — H.T.
Tsai 61574 — W.T. Tsang 22627, 24509, 24576, 26513, 26576, 26668, 26900, 27253, 29128,
29248, 29897, 30004, 30214, 30521 — C.P. Tsien 942 — C.L. Tso 23435, 23455.
C.W. Wang 74949, 75983, 78096, 80681, 85974, 86562 — H. Wang 2303, 5673 — Wang, Ko &
Lau 100027.
Y.M. Xia 138, 5681.
Z.H. Yang 10989.
S.C. Zhang 9801150 — S.X. Zhao 244 — P.C. Zhou 10531 — P.Z. Zhu 1389, 10439.